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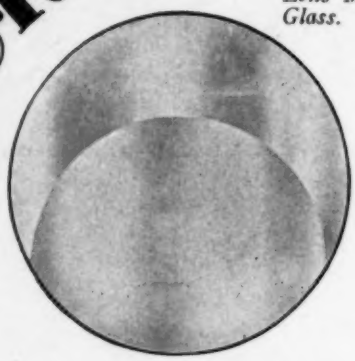

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AMERICAN JOURNAL OF OPHTHALMOLOGY

Volume 11 October, 1928 Number 10

FRACTURE OF THE OPTIC CANAL

OTTO BARKAN, M.D., AND HANS BARKAN, M.D.
SAN FRANCISCO

Five case reports, with accurate field charts, illustrate the various types of nerve injury with fracture of the optic canal. Especial emphasis is laid on the diagnostic value of the condition of the pupil and of the light reaction. Read before the Pacific Coast Oto-ophthalmological Society, April 19, 1928.

Fracture of the optic canal with resultant lesion of the optic nerve would seem to be much more common than is generally supposed. Although its recognition is important to the ophthalmologist as well as to the general surgeon and its medicolegal aspect is of considerable importance, yet it receives but bare mention in the textbooks of today and, more often than not, remains unrecognized in practice. A review of its clinical and pathological picture would seem therefore not to be out of place at this time.

Since the time of Hippocrates, it has been known that blows on the frontal region often result in blindness of one eye. Because of the frequently trivial nature of the injury, various quaint theories as to its causation arose. As Callan[1] states, it remained for Berlin to establish on a sound basis the true pathology. At the twelfth meeting of the German ophthalmologists in Heidelberg in 1879, Berlin[2], beside reporting three of his own cases, gave an analysis of Holder's very carefully made autopsies in 126 cases of skull fracture. Holder for thirty-three years filled a position corresponding to that of medical coroner. In eighty-eight of the 126 cases the fracture involved the base of the skull, and in eighty, or about ninety per cent, of these the orbital roof was likewise fractured. In fifty-four, or sixty per cent, of the cases involving the base of the skull, the lesion extended into the foramen opticum.

Unfortunately, these cases had no clinical data, but at the same time they established beyond doubt the frequency with which the optic canal was involved.

The present conception, well summarized by Wilbrand and Saenger[3], is that reduction of vision is usually due to a fracture of the bony canal with consequent hemorrhage into the sheath, or to actual laceration of the nerve within the canal, or to both. In some cases, however, pressure of an anterior clinoid process may be the cause. Phelps states that in 0.6 per cent of all fractured bases there is a fracture of the anterior clinoid. Dr. Naffziger, in a personal communication, informs me that he has seen three such cases with resultant loss of vision, one of which was verified by autopsy six weeks after the injury, the patient having died of an infection of the jaw. Finally, Evans[4] thinks that cases evidencing temporal or nasal blindness may be due to a contrecoup contusion of the nerve through its being forcibly driven against the bony boundaries of the foramen.

The sheath of the optic nerve is firmly attached to the rim of the foramen and in the extent of the canal constitutes the periosteum. Within the canal, therefore, the nerve is suspended from the periosteum by the arachnoid, there being a more intimate connection in one portion usually above and nasal. If a fracture extends through this point of attachment, it may lacerate the attachment, and this tear may continue via the septa into the substance of the nerve itself. Wilbrand and Saenger also suggest that the in-

crease of subdural pressure associated with fracture of the skull or of the optic canal would tend to force fluid into the torn nerve and thereby further increase destruction. The pathogenesis has been worked out in fatal cases which have come to autopsy and in which the clinical findings were not obtainable because of the unconscious

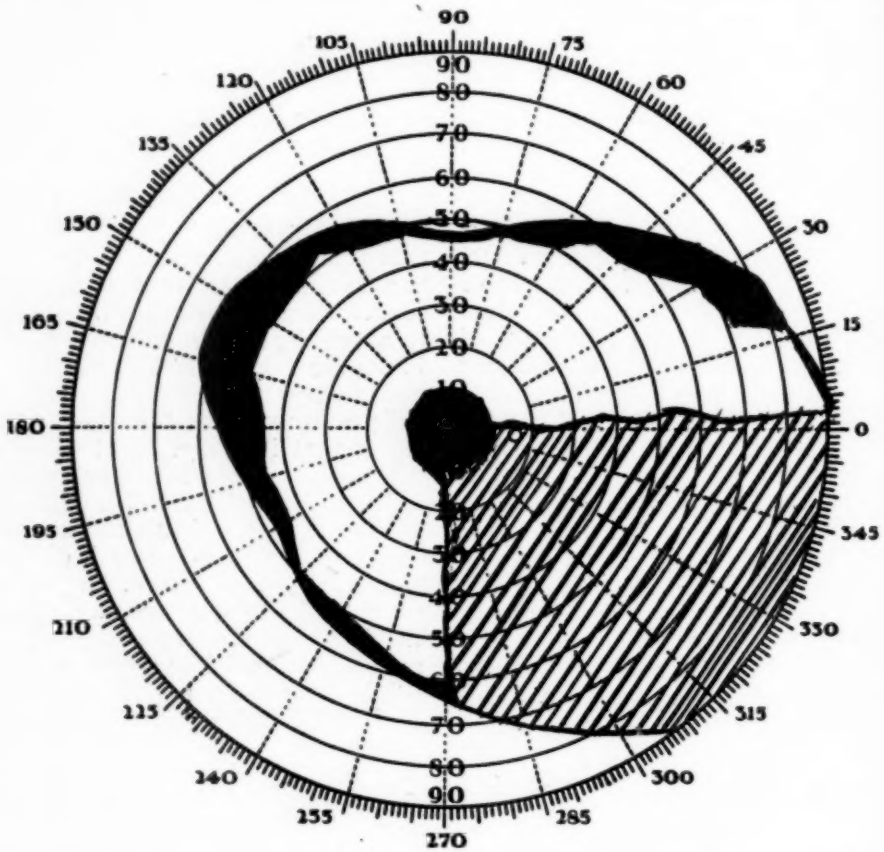

Fig. 1 (Barkan and Barkan). A. D., September 30, 1921. Solid = total scotoma (2 mm. red). Hatched = relative scotoma (2 mm. red).

state of the patient. It has been fairly assumed, however, that the pathological mechanism is the same in those cases of minor injury which concern us here and which we are able to observe clinically, but which by their very nature do not permit of autopsy confirmation.

As stated above, Holder observed in 126 cases that sixty per cent of all fractures of the base passed through the optic canal. This high percentage is probably due in part to the fact that four-fifths of Holder's material consisted of suicides, many of which were by gunshot wounds such as are very apt to cause fracture of the orbit and anterior fossa. In 470 cases of fracture of the base, Brun[5] found only eight cases of involvement of the optic nerve, of which three were from gunshot wounds. Battle[6] found hemorrhage into the optic sheath, in 168 cases, with reduced vision or amaurosis in eight cases. Phelps[7] states that compression of the optic nerve by orbital fragments occurred in only six cases, scarcely more than one per cent of his 570 basal fractures.

A further review of the literature shows varying statistical figures as re-

gards involvement of the optic nerve, due to great variation in the nature of the material and the methods of examination. It is a paradox that over twenty-two such cases were diagnosed by us in ophthalmological practice in the short space of six years. The inference would seem to be that many patients with fractures of the optic canal

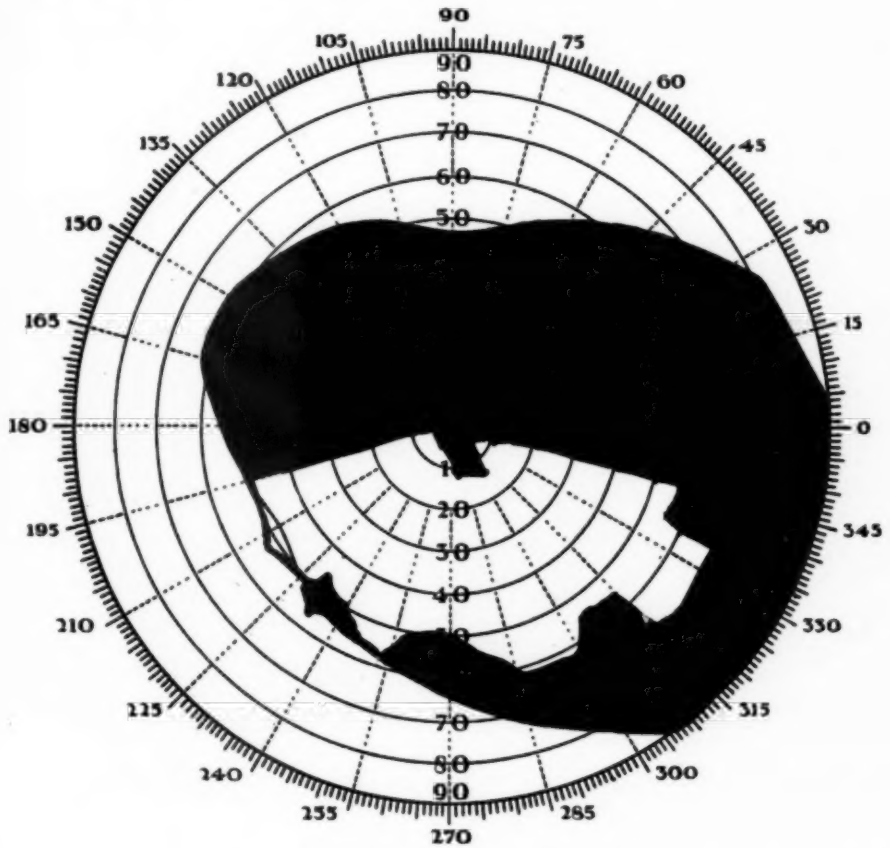

Fig. 2 (Barkan and Barkan). V. B., January 1, 1922. Solid = total scotoma (2 mm. red).

consult the ophthalmologist without ever being seen by a surgeon, and that other cases that come secondarily to the ophthalmologist have in the absence of other signs or symptoms of fracture not been recognized by the surgeon. In either case, they would not be included in the surgical statistics.

The optic canal would thus seem to be frequently fractured, and the explanation of the relative infrequency of lesion of the nerve must be due, in part at least, to the fact that the fracture so often misses that part of the nerve which is thickly attached to the periosteum and bone. It is also quite possible that often a hemorrhage into the sheath occurs which is not great enough to compress the nerve sufficiently to reduce vision. Indeed, in a number of our cases the patient had hardly complained of reduced vision, although a sector of his field was restricted to twenty-five degrees. If careful perimetric fields were taken in all cases of fracture at the base, we believe one would find a fair percentage of partial constrictions of the visual field.

In this regard Callan states: "I am

fully satisfied that the optic foramina are frequently involved in fractures of the skull, but, as most of the severe cases die, this lesion is neither looked for nor recognized. If the autopsy is not carefully made, by removing all the dura mater within the cranial cavity, and this means hard work, a fissure involving the optic foramen easily es-

Case reports: (1) Mr. A. D., September 30, 1921. In falling struck right side of face on root of tree. July 25, 1922, V. R. E. fingers at ten feet. Pupils equal. Direct light reaction, right pupil much reduced. Field, R. E., outer lower quadrant defect for red disc two mm., including macular region. Fundus, marked temporal pallor.

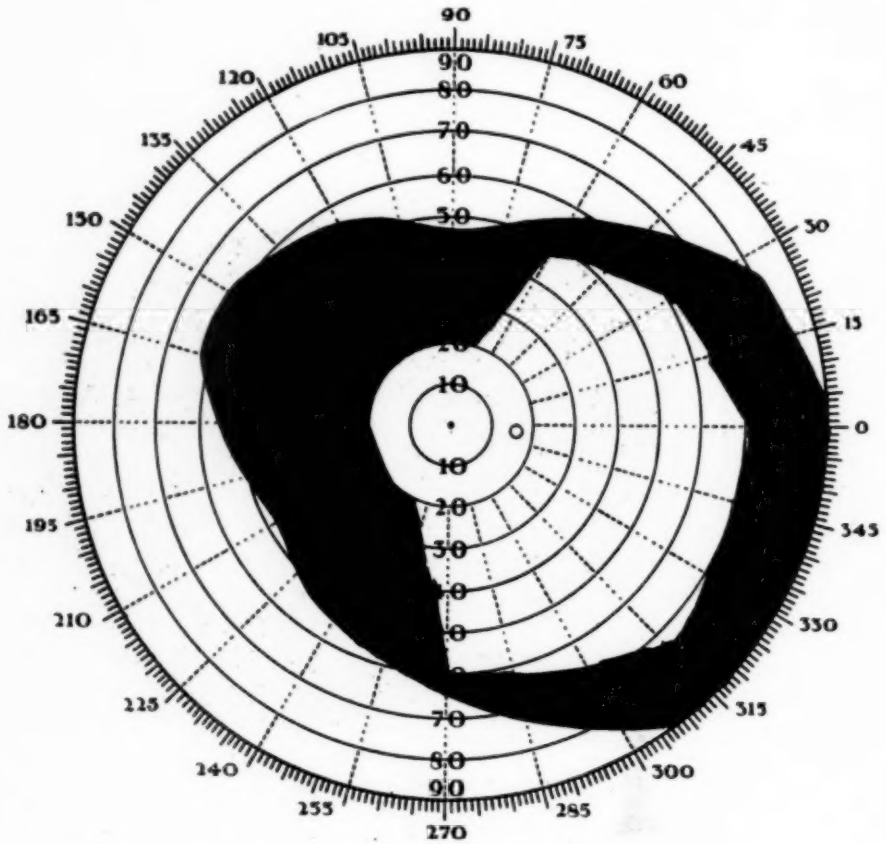

Fig. 3 (Barkan and Barkan). P. C., June 28, 1926. Solid = total scotoma (2 mm. red).

capes attention." Callan had seen the four cases included in his paper within two years, which was remarkable from the fact that there were then not more than eighty cases recorded in medical literature.

The following case reports, of which we are showing visual field charts, have been selected from our series of twenty-two cases because they demonstrate certain features we are calling attention to.

(2) Mr. V. B., January, 1922. Fell twelve feet while working as a pile-driver, breaking shoulder and rib and cutting upper lid R. E. Not unconscious. When bandage was removed on fourth day noticed blindness R. E. Previous diagnosis of optic atrophy antedating injury and not compensable. V. R. E., fingers at eighteen inches. Pupils, R. E., 4.5 mm., L. E. 4 mm. Direct light reaction R. pupil almost absent. Fundus, R. E. marked tem-

poral pallor. Field, gradually improved from the beginning. When seen by us six week after the injury, this was fifty per cent better than when first observed.

(3) Mr. P. C., May 24, 1926. Struck on right temporal region with hammer during carpenters' strike. Unconscious on and off four days. Seen by us on June 18, 1926, with V. R. E. 2/10. July 9, V. R. E. 5/10 and Jaeger 3. Fundus normal. X-ray negative. Pupils normal.

(4) Mr. J. E., January 18, 1924. Left face and orbital margin struck by falling steel structure, fracturing jaw and bruising L. E. February 20, 1924, L. E. showed traumatic mydriasis due to tears of sphincter, secondary glaucoma caused by subluxated lens. Tension normalized by cyclodialysis. V. R. E. 10/10, L. E. 4/10. Field showed large defect down and out including macular region. There were no local ocular changes to account for this.

(5) Mr. S. C. B., May 5, 1926. Struck by automobile. Unconscious three hours. Blind R. E. since then. Attending doctor noted corneal abrasion and scratch of lid only. Hyperopia 4.00 D., slightly more on right than left. Visual disability had been proclaimed noncompensable by four different examiners who diagnosed the case as one of congenital amblyopia associated with a high refractive error. Seen September 4, 1926. Field showed small peripheral defect enlarging into very extensive central scotoma. V. R. E. fingers, eccentrically, L. E. 8/10. Right, very slight pallor of disc. All findings, including x-ray, negative.

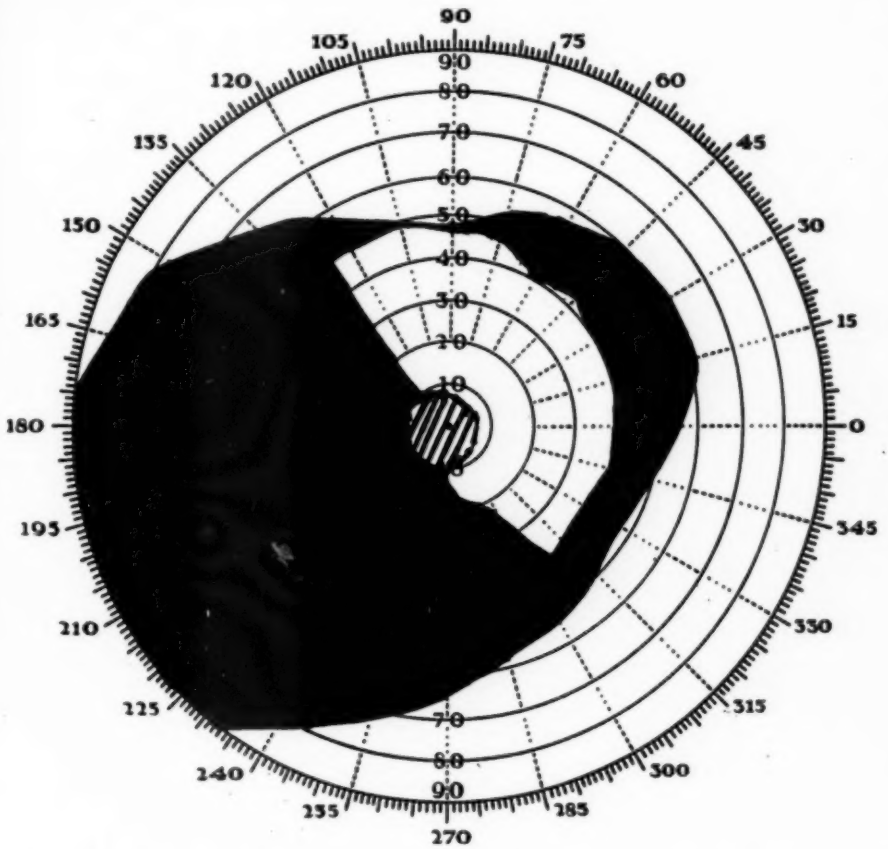

Fig. 4 (Barkan and Barkan). J. E., February 20, 1924. Solid = total scotoma (2 mm. red). Hatched = relative scotoma (2 mm. red).

The history of a typical case is usually that of a blunt injury (it may be from a relatively slight blow) in the region of the orbit—usually the outer portion of the superior orbital margin. A relatively slight force suffices to fracture the orbital plate, because this is very thin in its posterior two-thirds. On the other hand, fractures of the lids has subsided. Either the immediate—almost complete—loss of vision rapidly improves, in which case the cause must have been pressure of blood within the sheath with consequent functional inhibition of the visual impulses, or after the initial improvement of vision a permanent defect in the field remains, in which case there must

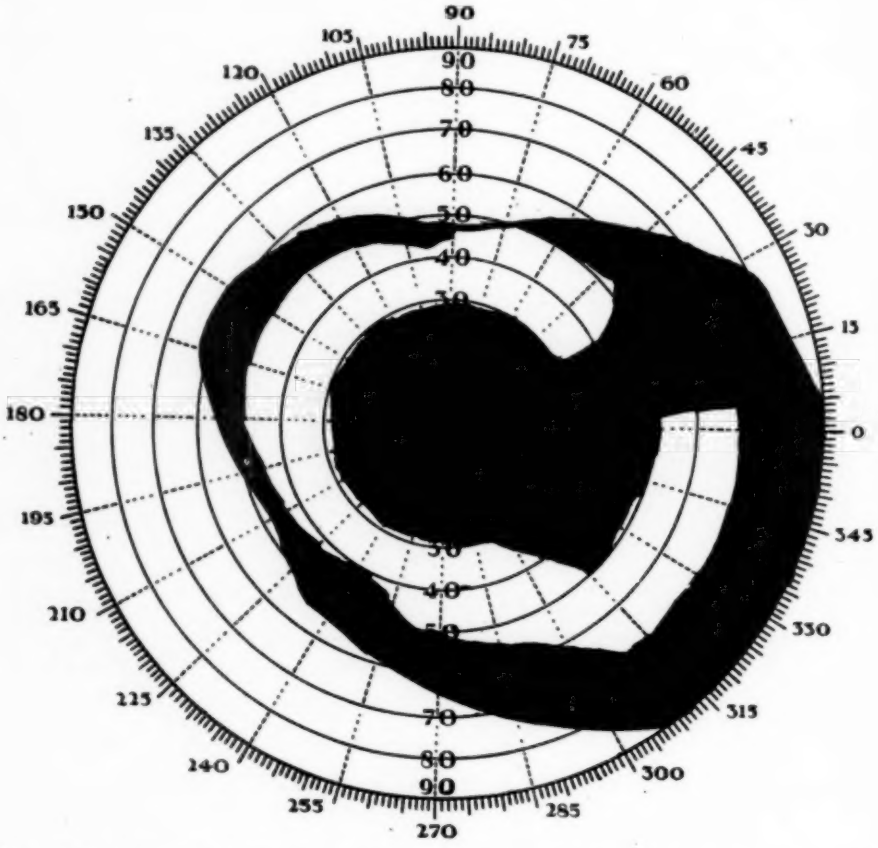

Fig. 5 (Barkan and Barkan). S. C. B., September 4, 1926. Solid = total scotoma (2 mm. red).

maxilla result more rarely in injury to vision.

Forensically, injuries to the supraorbital region are therefore very important because the injury may seem slight in comparison with the succeeding loss of vision. The individual, if he is conscious, notices immediate loss of vision, or he first notices reduction of vision upon regaining consciousness or after the occasional swelling of the

have been a tear in the nerve in addition to the pressure of the blood; or finally amaurosis remains as the result of complete severance of the nerve.

Ophthalmoscopically, a slight congestion of the disc has been reported, but we have never observed this. Pallor due to descending atrophy may be observed from the second week on. A sector defect of the visual field at the beginning may be interpreted as

due to a tear in the nerve and will therefore remain more or less permanent. Central scotomata may more rarely be observed. Wilbrand and Saenger state that field defects are not characteristic either in form or situation. This may be generally true, but we have found that in some cases a sector defect extending to and including the macular region is sufficiently characteristic to be almost pathognomonic.

The condition of the pupil is of especial interest. In the early stages and where there is complete interruption of the visual impulses, the direct light reaction is absent and the pupil may be slightly dilated in semidarkness. If the interruption is functional, due to pressure of blood, the pupillary reaction returns as absorption progresses. Where the nerve is torn, however, the light reaction remains in abeyance in spite of the improvement in vision. Some of our cases demonstrate this point very clearly, and proper interpretation of this interrelation explains the clinical picture and protects one from a mistaken diagnosis. Such cases have been diagnosed as of luetic origin and antedating the injury. Theoretically the condition of the pupil is of considerable interest, in that it affords further clinical proof of the localization of the pupillomotor fibers in the macular bundle.

In some of our cases, we find the visual field functioning in two-thirds of its extent, vision of counting fingers, but the pupil almost immobile to light because of injury to the macular bundle. In other cases, in which there is an extensive defect of the field but the macular bundle has been spared, the pupillary reaction is normal in promptness and extent. The almost selective way in which the macular bundle has been picked out by the trauma in some of our fields would seem to show a preexisting anatomical structure of the nerve in which the bundle runs as a separate and apparently more vulnerable structure.

Any laceration, in our experience, causing a sector defect in the field is therefore apt to include the macular bundle and therewith central vision and the direct light reaction of the pupil. This is important prognostically, because if the macular bundle has been included by the tear, we can foretell that, in spite of the usual initial improvement in vision and field, central vision will not be restored. Incidentally it is almost typical of these sector defects to be downward and outward, corresponding to the fracture above and the nasal superior attachment of the nerve.

The general surgeon attaches considerable significance to unilateral dilatation and fixation of the pupil in severe skull injuries with suspected intracranial hemorrhage. Other things being equal, he would tend to localize the hemorrhage on the side of the dilated and fixed pupil. The question arises whether the fixed pupil following fracture of the optic canal might not induce him to wait for subsequent dilatation in hope of obtaining a localizing sign, and thus lose valuable time.

X-rays have up to the present been of no avail in the type of case which we are reporting.

We have not been able to find in the literature mention of any surgical procedure for the relief of this condition having been tried. Ramsay, however, advises it. He states: "Pringle's important observation that so many cases of traumatic amaurosis are due to hemorrhage into the sheath of the optic nerve makes the prognosis more favorable. Occasionally partial recovery of sight occurs, and that small percentage of cases ought to encourage the surgeon to advise operation at the earliest possible moment after the blindness is discovered. It is neither a difficult nor a dangerous operation to open into the orbit by removing its outer wall—Krönlein—to expose the optic nerve and evacuate any blood found in its sheath; but if such operation is to have any chance of success, it must be done without delay—before compression of the blood clot has had time to cause irreparable damage to the nerve."

Sewall's[8] method of approach to the apex of the orbit may prove more useful for this purpose, as it is more direct, is subperiosteal throughout, and is associated with less trauma than a Krönlein. In view of the possibility of an anterior clinoid process pressing upon the nerve—and this may well be the case in spite of negative x-ray findings—Dr. Naffziger has suggested to me that the best method of approach would be a subdural one, as for pituitary tumor, looking for a fracture of the roof of the orbit on the way. This would enable one either to approach the anterior clinoid or to proceed though the roof of the orbit to the optic nerve and foramen as the case might indicate. It will remain for the surgeon to decide which of these methods of approach best answers the purpose.

We should suggest that our colleagues be watchful for this type of case and, if an early diagnosis be made, urge operation in the hope that early removal of the pressure on the nerve may restore vision in some cases in which it would otherwise be permanently lost.

490 Post street.

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PLASTIC DACRYORHINOSTOMY

Dupuy-Dutemps and Bourguet technique for direct anastomosis of tear sac with nasal mucous membrane

J. J. CORBETT, M.D., F.A.C.S.
BOSTON

The technique of the Dupuy-Dutemps method (modified by Bourguet) for establishing an anastomosis between the mucous membrane of the lacrimal sac and that of the nose does not yet seem to have been published in detail in the English language. The claims made for this operation are that it preserves intact the lacrimal sac, that it provides a definite means of maintaining the patency of the newly made drainage canal, and that it provides against the formation of granulations which would defeat the purpose of an otherwise successful technique. From the ophthalmic department of the Boston City Hospital.

In the tear-sac surgery of today there are two distinct objectives: the operation must relieve and prevent the recurrence of the infection; and it must banish for all time that ever-present and most annoying concomitant disturbance, epiphora. If an operation on the lacrimal drainage apparatus will not accomplish this two-fold purpose, it should not be given a place in present-day ophthalmic surgery.

But why the emphasis on ophthalmic surgery? As a matter of fact, strange as it may seem, most of the progressive work along this line was done by the rhinologist, and not by the ophthalmic surgeon, until Dupuy-Dutemps presented to the Ophthalmological Society of Paris in June, 1920, a description of his technique for direct anastomosis of the lacrimal sac with the nasal mucous membrane. Dupuy-Dutemps is ophthalmic surgeon-in-chief at the old (about three hundred years) Saint Louis Hospital in Paris, while as chief surgeon to the ophthalmic department

of the Rothschild Foundation he works in a decidedly modern environment with up-to-the-minute equipment.

In the opinion of the writer, simple extirpation of the sac as a remedial measure in cases of chronic dacryocystitis is obsolete. As a surgical procedure it is inadequate, its end result being incomplete. It removes the infection, pus, phlegmon; but only in very exceptional cases does it correct that most troublesome feature which is all-important to the patient, the constant overflow of tears.

Instead of extirpation of the sac, there are, at present, three outstanding methods, each of which is designed to relieve, not only the inflammation, but also the epiphora. These are the West operation, the Toti operation which has been improved by the Mosher modification; and the Dupuy-Dutemps and Bourguet operation.

The West operation is essentially an intranasal procedure. The Toti and Mosher-Toti operations present a combined intranasal and extranasal technique. The approach in the Dupuy-Dutemps and Bourguet operation is entirely from the outside. The first two methods have met with a high degree of success, but the statistics of the last would indicate an unusually satisfactory record of good results. When this operation becomes better known, it will undoubtedly become very popular with ophthalmic surgeons for three excellent reasons: first, it is the only operation which preserves intact the lacrimal sac; second, it is the only operation which provides a definite means of maintaining the patency of the newly-made drainage canal; third, it is the only operation which provides against the formation of granulations which defeat an otherwise successful technique. In addition to these features, the very high degree of success in clearing up both infection and epiphora will assuredly command attention.

It was the privilege and pleasure of the writer to observe the clever French ophthalmic surgeon Dupuy-Dutemps perform his operation on several occasions both at the Saint Louis Hospital and at the Rothschild Foundation in Paris during the summer of 1925. Dupuy-Dutemps, who operated under local anesthesia, had two well-trained assistants in each institution. The average time to complete the operation was forty-five minutes, very evidently aided in large measure by the ideal team-work.

Dupuy-Dutemps injected two c.c. of two per cent novocain solution in adrenalin chloride along the line of incision. He saturated a cotton plug with a ten per cent solution of cocain in adrenalin 1 to 1000, and placed it in the middle meatus of the nose near the anterior tip of the middle turbinate in order to produce anesthesia and ischemia of the nasal mucous membrane. The plug remained in this position until the nasal mucous membrane was exposed by removal of the lacrimal crest. This anesthesia was sufficient to last throughout the operation, and Dupuy-Dutemps stated in his paper of September, 1922, that he had operated on a child thirteen years old with the same anesthesia without any difficulty whatever.

Illumination of the field of operation is an important factor, and Dupuy-Dutemps uses a concave illuminated head mirror which throws sufficient light into the field. He considers this type of illumination indispensable.

Fig. 1. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) Line of skin incision.

The skin incision is that commonly used in all external sac operations, starting about 0.5 cm. above the internal palpebral ligament, passing down over its bony insertion (about

five mm. to the inside of the inner canthus) in a line parallel to the lacrimal crest and terminating at a point opposite the entrance of the nasolacrimal canal.

Fig. 2. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) Lacrimal sac reflected outward. Chisel starts resection of lacrimal crest and finishes along the dotted line.

The internal palpebral ligament is cut, the superficial fascia, muscle, and deep fascia divided, and the sac exposed and reflected outward as it is lifted out of its bony groove. The sac is retained in this position by means of

Fig. 3. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) The resection of the bony window is completed. Nasal mucous membrane shown as floor in the open wound. Long incision terminating in T formation at each extremity.

a retractor, while a similar retractor holds the structures on the opposite side of the wound well over toward the median line. The retractors are held by one assistant while the other assistant works in the field with the operator.

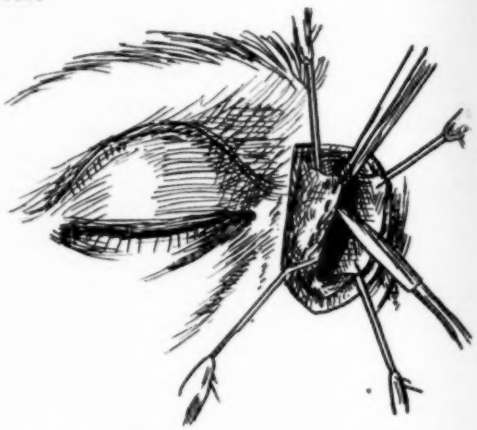

Fig. 4. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) This picture shows the opening of the nasal mucous membrane made before that of the sac, according to the old method. Dupuy-Dutemps now prefers to open the sac first and clean it before opening the nasal mucous membrane.

The next step is the complete removal of the anterior lacrimal crest by means of a chisel. When the nasal mucous membrane is exposed, the bony opening is enlarged with a Citelli forceps, making an oval-shaped window with the long axis (10 to 12 mm.) in the vertical plane, while the transverse diameter varies from 8 to 10 mm.

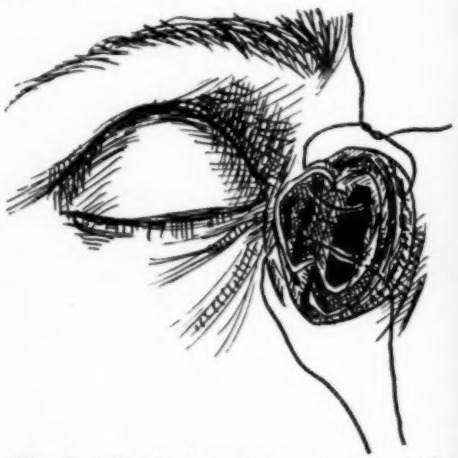

Fig. 5. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) The sutures of the posterior edges are tied. Two sutures are passed into the anterior edges and through the periosteum and other subcutaneous tissues.

At this stage a longitudinal incision is made in the wall of the sac. The pus or mucus, if present, is removed, and the inner lining of the sac is swabbed with tincture of iodine. The nasal plug is then removed. A vertical incision is made in the nasal mucous membrane, equal in length, and directly opposite the sac incision. Three sutures of 000 catgut are passed through the posterior tip of the nasal mucous membrane with the help of a small semicircular Deschamps needle.

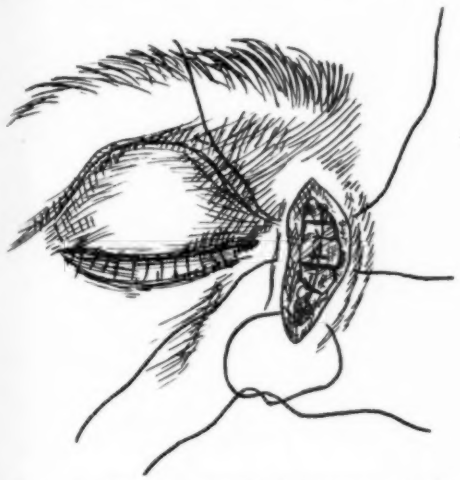

Fig. 6. Plastic dacryorhinostomy. (After Dupuy-Dutemps.) The anterior edges of the nasal mucous membrane are brought together by no. 3 catgut sutures. The skin sutures are in place ready to be tied.

These three sutures are held taut while a cut two mm. long is made at a right angle to the upper and to the lower end of the vertical incision. This gives a flap which facilitates approximation to the posterior lip of the sac. The three sutures are now drawn through the posterior lip of the sac incision by means of a small Reverdin needle, tied, and cut close. Thus is formed the posterior wall of the new lacrimal drainage canal.

After the same fashion three more 000 catgut sutures are passed through the anterior lip of the nasal mucous membrane with the Deschamps needle, and held taut while the right angle cuts (similar to those in the posterior lip) are made. These sutures are now drawn through the anterior border of the sac, and, in addition, through the periosteum and overlying soft tissues. The sutures are then carefully tied. It is this last little feature of the Dupuy-Dutemps technique, (the suspending of the anterior wall of the canal from the overlying tissue) which aids in maintaining the patency of the new lacrimal canal.

Three silk sutures close the skin incision. An ordinary eye bandage is applied, but there is no intranasal dressing. Sutures are removed on the fifth day, and on the eighth day the bandage is discontinued.

Dupuy-Dutemps and Bourguet, in their paper "Care of chronic dacryocystitis and of epiphora by plastic dacryorhinostomy", published in La Presse Médicale, September, 1922, reported operations on one hundred and fifty cases. They were able to check up on one hundred and fifteen patients who returned for observation, with the following results:

complete failure (without return of dacryocystitis)	4
partial success	7
complete cure	104

In the classification of "complete failure" they included those cases in which there was total obliteration of the newly made orifice, with the epiphora persisting but no suppuration. In other words, the cases included in this classification presented results similar to those following extirpation of the sac.

"Partial success" refers to those cases in which it can be demonstrated by an injection from a syringe that there is really an anatomical communication, but one which is not physiologically capable of the normal evacuation of tears. The epiphora persists, and a colored solution dropped into the conjunctival sac does not drain into the nose.

"Complete cure" is applied only to those cases in which there is no longer any sign of epiphora, and in which the physiological permeability of the lacrimonasal communication can be demonstrated by spontaneous passage

into the nose of a colored solution which has been instilled into the conjunctival sac. These requirements come pretty close to measuring up to the normal drainage of the lacrimal secretions.

In June, 1925, Dupuy-Dutemps stated that to date he had done over five hundred operations, with total relief in ninety-seven per cent of the cases. This is an unusually high percentage of cures, higher, in fact, than accomplished by any other operation performed for this purpose.

Since September, 1925, it has been possible for the writer to bring to the operating table only thirty-one cases of chronic dacryocystitis, in patients whose histories have varied from one to fifteen years' duration. Two of these patients had double chronic dacryocystitis, making the total number of operations thirty-three. These operations were done under ether, and with the profuse bleeding which always accompanies this kind of anesthesia. For illumination the Cameron headlight was used, otherwise the technique above described was adhered to as closely as possible.

All of these cases were followed for one month, at the end of which time all could be classified as complete cures with the exception of three cases. Of these three cases, one was a complete failure, and the other two would come under the classification of partial success.

On several occasions between June, 1920, and May, 1924,[1] Dupuy-Dutemps and Bourguet reported the results from their operation. At a medical conference in Barcelona in February, 1925, they gave statistics of four hundred and twenty cases.

As far as can be ascertained, the writer is giving the first description of their technique, with a report of a series of cases, which has been published in English.

Personal observation of these few cases, together with the very high percentage of successes as reported by Dupuy-Dutemps and Bourguet, leads to the belief that here is a method for the relief of chronic dacryocystitis and its attendant epiphora which is well worth copying, developing, and perfecting by ophthalmic surgeons.

520 Beacon Street

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PTOSIS OPERATION ACCORDING TO THE SHOEMAKER METHOD

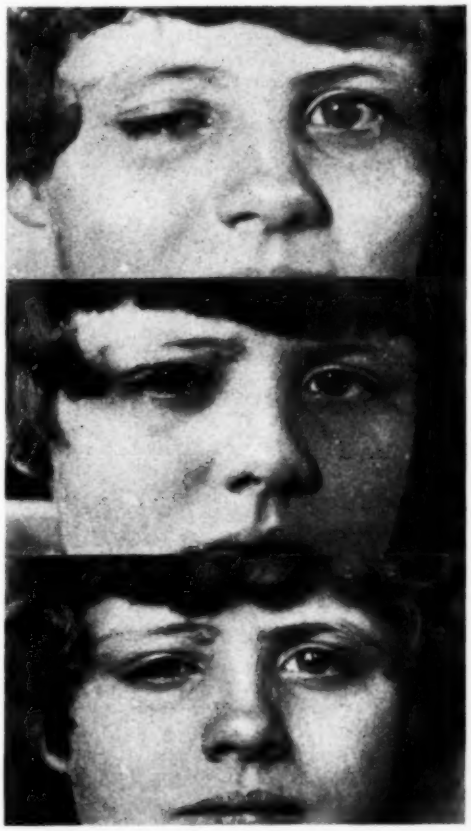
HUNTER W. SCARLETT, M.D.
PHILADELPHIA

The case reported was treated by Shoemaker's open modification of the Motais operation. (See also page 820.)

In May, 1897, Motais described his method of operation for ptosis of the lid. The stated principle of this operation was to supply a physiological substitute for the affected levator tendon. His procedure was to plant the middle third of the superior rectus tendon in a pocket between the tarsus and the orbicularis muscle, bringing the stitch out through the skin of the upper lid and tying it over a roll of gauze. Two months later, Parinaud suggested stitching the whole tendon to the lid. His idea was to bring the stitches up between the tarsus and the orbicularis muscle and carry them out at the ciliary margin in front of the eyelashes.

Dr. Shoemaker, in October 1907, disputed the view that in the Motais operation there was a physiological substitution of the middle third of the superior rectus tendon for the levator muscle. He claimed that after such an operation the lid was held in its new position simply by anchorage. At the same time he suggested the open method of performing the Motais operation. This consisted, after the tendon had been exposed, of approaching it by making an incision through the entire thickness of the lid at the upper border of the tarsus. He later advocated putting a suture through the middle third of the superior rectus tendon without isolating or separating it in any manner from its original attachment; next bringing the suture through the opening in the lid, taking a bite in the superior border of the tarsus; and finally bringing it out through the skin, and tying it over a small piece of rubber tubing. Thus the lid could be brought up and fastened tightly to the eyeball.

The case here reported was one of congenital ptosis of the right upper lid, in a girl twelve years old, who had had an unsuccessful "Hess" operation two years previously. Her lid was completely ptosed.



Operation for ptosis (Scarlett). Above, before operation. Center, one week after operation. Below, six months after operation.

The procedure for correcting the deformity was as follows:

The upper lid was everted and the superior rectus tendon was isolated but not severed from its attachment. A double-armed suture was next inserted in the middle third of the exposed tendon, from within outward, loop next to the eyeball. The long ends of the suture were then wrapped in gauze and laid aside for the moment.

The next step consisted in making

an incision parallel to the upper border of the tarsus, and extending the entire length of the lid through skin, orbicularis muscle, Müller's muscle, and conjunctiva. The upper border of the tarsus was next freed of orbicularis muscle. This opened a hole in the lid, through which the ends of the tendon suture were then drawn, and a bite was taken in the middle third of the upper portion of the tarsus, proceeding through the orbicularis muscle and coming out on the skin surface, where the ends were tied over a small piece of rubber tubing. The knot was tightened according to the amount of correction desired. We found it necessary to slightly overcorrect in order to maintain the proper after-position of the lid.

As far as I could determine in searching the literature Dr. Shoemaker was the first to suggest the combination of the open method above described and of suturing the entire tendon, by means of a stitch through its middle third, to the upper border of the tarsus.

The advantage of this was proved by our result as illustrated, for after the operation there was good movement of the eyeball in all directions. The upper lid could be raised on upward rotation of the globe, and was satisfactorily lifted on looking straight ahead. There was no interference with winking. After six months, the lids could be closed by an upward movement of the lower lid.

230 South Twenty-first street

CONGENITAL ABSENCE OF ABDUCTION

Case report

MAJOR A. WILDE, M.D., F.A.C.S., Major Medical Corps
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The patient, a girl, was seen at nine years. The parents had first noticed the abnormality at four years. Delivery had been normal, without forceps. Convergence was normal. The eyes were parallel in looking directly forward. On looking to the right, the right eye failed to move appreciably beyond the midline, and the same was true of the left eye on looking to the left. Operation was not advised.

M. T. O., aged nine years, was brought by her parents, who stated that she was troubled with "cross-eyes."

Family history: The parents were well, not related by blood, and neither gave a history of eye disorders or troublesome refractive errors. In one brother and sister, living and well, the eyes were reported as normal. There were no known evidences of developmental defects in grandparents or other relatives.

Past history: Her birth was a normal delivery at full term, without the use of instruments. There were no evidences postnatally of injury or abnormality. She had always been active physically and mentally. Had measles and chicken-pox at the age of five years, but no other severe infections. There had been no serious accidents or other presumptive evidence of head injury. She entered school at six years, and always maintained her place in class with others of like age.

Present illness: The parents first noted something unusual about her eyes at the age of four years, but having been assured "she would grow out of it", they dismissed the subject from their attention. While noticeable "only now and then", she had recently become concerned about her eyes on account of remarks by her associates.

Physical examination: The patient was a normally developed white girl, alert mentally, and showing no stigmata of defective development. Externally the eyes were normal. The vision was normal for both near and far. The pupils reacted promptly to

light and accommodation. The lids were normal in appearance and motility.

When looking directly forward the eyes were parallel. No nystagmus developed when looking in any direction.

Fig. 1 (Wilde). Congenital absence of abduction. Looking directly forward.

When attempting to look to the right, the patient used only the left eye, which viewed the right visual field by adducting strongly. Coincidentally the right eye remained practically in the mid line, slight abductive action being noticed arising probably from the action of the obliques. This is shown in the accompanying photograph. As there was no suggestion of any wheel-like motion, it was inferred that the actions of the two obliques were functionally balanced.

When directed to look to the left, the above picture was reversed. The right eye was strongly adducted, the left remaining directed forward. As shown in the photograph, there was no suggestion of abduction.

Convergence was normal. No conscious diplopia occurred when viewing either lateral field, there being clearly habitual suppression of the image in the eye not used at the moment. The peculiarity of motility caused the patient no annoyance whatever, and were it not for the comment of others she would have remained unconscious of its presence. The fundi were normal, the media clear.

As no suggestion of asthenopia occurred, no refraction was done. It was not thought advisable that she should wear glasses if not actually indicated, as they might tend to cause her to concentrate upon and perhaps grow abnormally sensitive of her eye peculiarity.

Operative procedures were also not advised, as the defect caused no form of disability or complaint. In handling cases of the kind, the greatest need is to explain the nature of the defect to both patient and family, thereby obviating unnecessary alarm, and minimize the anxiety that arises from ominous suggestions of well-intentioned but not well-informed neighbors.

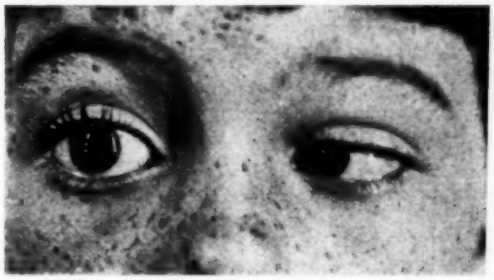

Fig. 2 (Wilde). Congenital absence of abduction. Looking to the right.

The first notice of congenital absence of the power of abduction was probably that of Heuck, published in the Klinische Monatsblätter für Augenheilkunde during 1879. Various reports were added from time to time, and these were later collected by Duane in the Archives of Ophthalmology volume 34, number 2. The total number of cases thus recorded was fifty-four.

Duane dismisses the nuclear origin of the loss of abductive power, and accounts for the defective motility by complete absence of the external recti, and their replacement by fibrous cords. However, if such cords were present in the case here presented, they must have been either quite lax or attached well posteriorly, as adduction was unimpeded. The possibility of normal muscular elements being present but inserted so far toward the posterior pole as to produce no appreciable abductive action must be admitted.

N. Bishop Harman, when reporting a case of congenital absence of both external and internal recti in a sixteen-

year-old girl, listed three possibilities to explain their lack of demonstrable action. 1st. They might be totally absent. 2nd. They might be faultily inserted into the globe. 3rd. They might be rendered ineffectual by abnormally developed check ligaments. As the most likely possibility he regarded the insertion of the tendon so far to the rear that the action of its muscle would be nil.

This form of ocular defect has frequently been associated with other congenital abnormalities, or stigmata of degeneration. None were evident in the present case. Furthermore there was no evidence of retraction or advancement of either eye when attempting horizontal movements, nor did the latter cause any alteration in the size of the palpebral fissures. The preponderance of this defect in females has often been commented upon.

In the present case operation was not advised, as no diplopia was noticed in any field for either near or far. The internal recti were sufficient to afford good binocular near vision. Upon operation, the congenitally absent muscles are so often found to be mere fibrous cords, lacking all contractile element, that their advancement to a more forward position upon the sclera would produce no other effect than that of additional and abnormal check ligaments. If such advancement were done, and they became attached to the globe in their new position, it is possible that they would so embarrass the action of the interni that convergence would be interfered with or even diplopia for near produced.

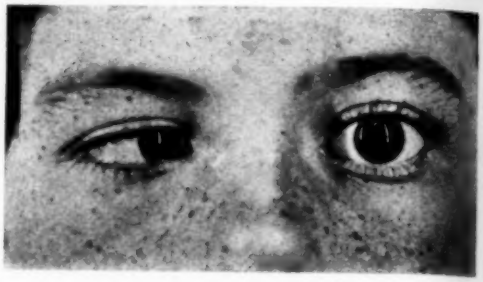

Fig. 3 (Wilde). Congenital absence of abduction. Looking to the left.

Fort Sam Houston

ARGYROSIS OF THE TARSAL CONJUNCTIVA IN AN INFANT

A case report

DERRICK T. VAIL, JR., M.D., D.Ophth. (Oxon.)
CINCINNATI

An infant aged fourteen months had had a membranous conjunctivitis, probably pneumococcic, at the age of one month. Silver nitrate in two and five per cent solutions had apparently been used for a long time, and later, after surgical removal of redundant tissue, ten per cent argyrol was used. Pathological examination showed a chronic inflammatory reaction in the deeper tissue, with granulation tissue superficially, and pigment granules, presumably precipitated silver, were found within the granulation tissue and to a greater extent in the deep tissue.

In discussing the use of silver nitrate in ocular diseases, in 1854, Graefe[1] warned the practitioner that this substance must be carefully and cautiously used, its effects watched, and the remedy discontinued, modified, or increased in its dose as conditions demanded. Since Graefe's time silver nitrate has been a sovereign remedy in the hands of countless ophthalmologists, and it is still considered by authorities to be one of our most valuable bactericidal agents. If employed in weak solutions up to two per cent little damage to the conjunctiva or cornea occurs, especially in the adult; but stronger solutions may and do lead to serious results. The following case serves to emphasize this point and to repeat Graefe's warning, seventy years later.

C. C., male, aged fourteen months,

referred by his local physician, was first seen June 21, 1927, when the following history was obtained:

When the infant was one month old the right eyelids became inflamed, swollen, and closed, a mucopurulent secretion formed, and a membrane was discovered lying on the tarsal conjunctiva. This membrane became thicker and thicker. A sore lump was found in front of the right ear. Six months later the left eye became similarly affected. A smear and a culture were apparently taken and the condition attributed to the pneumococcus, since pneumococcus vaccine was used for many months. The child was not fretful or obviously sick. A letter from the infant's local physician stated that "owing to the slowness of healing two and five per cent silver nitrate solutions were applied to the eyelids". This, the parents stated, was done frequently for several months. Nine months after onset (age of ten months) ulcer of the left cornea occurred, requiring a Saemisch operation. An external canthotomy of each eye was also done probably at this time. The left eyeball became totally blind and shrunken. The right cornea has remained unaffected. The upper lids of each eye, however, are enormously indurated and are lined with a white membrane.

One week ago the child was seen in consultation with an ophthalmologist, who had smears and cultures taken. The report showed "diphtheria bacilli," and diphtheria antitoxin was used (the parents not knowing the dosage), but without effect. The "diphtheria bacillus" was later shown to be Bacillus xerosis.

Examination showed:

Right eye: The upper lid greatly swollen and boggy (fig. 1). The lower lid externally was normal. On eversion (fig. 2), a thick grayish dirty membrane on a granular base with curling edge covered the whole upper tarsal conjunctiva. This could not be pulled or wiped away. Eyeball and cornea unaffected. The red reflex was normal and a quick view of the fundus did not show any abnormality. There was no preauricular or submaxillary adenitis present. A thin mucoid secretion was seen in the lower cul de sac.

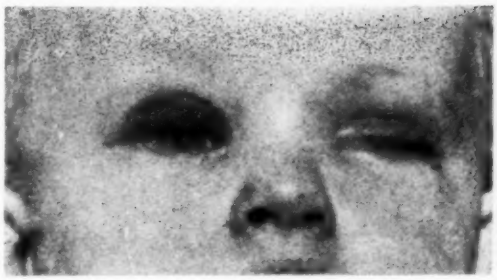

Fig. 1 (Vail).

Left eye: The upper lid presented the same appearance as on the right side and a similar membrane was adherent to the tarsal conjunctiva. The eyeball was in a phthisical state, shrunken and hard.

A diagnosis of silver nitrate folliculosis was made.

Smears and cultures by Dr. Wherry, bacteriologist of the University of Cincinnati medical school, showed the following:

Direct smear—two pairs of gram-negative diplococci.

Cultures—B. xerosis, staphylocci, streptococci, and a very small gram-negative bacillus on blood agar only. This gram-negative bacillus resembles the Koch-Weeks bacillus. Pure cultures of these were obtained and vaccines made.

A letter was sent to the family physician advising mild lotions, surgical removal of the redundant conjunctival tissue, and, if this failed or did not

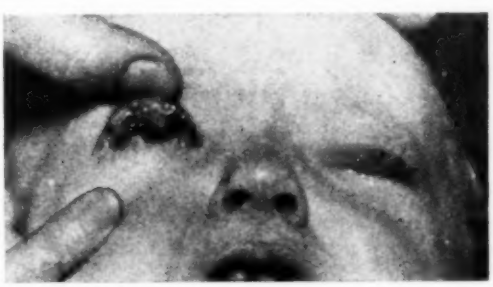

Fig. 2 (Vail).

seem wise to him, to try radium to the left upper lid conjunctiva. Also use of the vaccine made by Dr. Wherry was suggested.

Nothing was heard about this patient until November 10, 1927, when he came in again. The condition described above was found to be unchanged. A letter from his family doctor stated that "on July 8, 1927, all granulation tissue and fibrous exudate was thoroughly removed down to normal tissue under ether anesthesia. Ice compresses were continuously applied for twenty-four hours and there was very slight local reaction. Nothing stronger than one per cent optochin was used at any time following the operation, and that sparingly. The eyes were flushed as often as was necessary in order to keep them clean with boric acid solution, and following that White's ointment was used.

"I was disappointed to find the same type of granulation gradually returning. August 18 (one month later) under ether anesthesia Dr. Paul Mossman, medical officer in charge of the trachoma investigation of the U. S. Public Health Service, removed all diseased tissue. Ice compresses, ten per cent argyrol, one and two per cent optochin with various mild antiseptic ointments followed with fair results. Yet the thick fibrous exudate studded with granulation came back to such an extent that I again removed them under ether October 28. Tonsils and adenoids also were removed at this time.

"One treatment of radium was given to the left eye August 30th (I think two hours). A severe burn resulted below the left lower lid on the cheek which healed only one week ago. Frozen section of the specimen taken from the lids could be mistaken for an epithelioma."

On November 10th under cocaine I removed two strips of the tissue in the left eye down to the tarsus, placed the tissue in ten per cent formalin, and sent it to Dr. F. H. Verhoeff for pathological study. His report is as follows:

"The surface of the tissue is coated with a thick layer of fibrin. Beneath this there is granulation tissue which is organizing the fibrin. The deeper tissue shows chronic inflammatory reaction. Within the granulation tissue and to a greater extent also in the deep tissue there is an abundance of

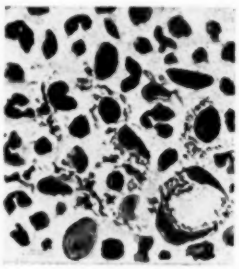

Fig. 3 (Vail). Cellular infiltration and deposit of silver pigment.

brownish pigment granules. These are found scattered also within cells, and are frequently seen in the walls of blood vessels of all sizes including capillaries. Presumably this pigment is precipitated silver. It would seem that an adequate cause for the condition was injury produced by silver nitrate solution. In places there is considerable infiltration of the granulation tissue and fibrin with pus cells, indicating a secondary infection."

The infant was allowed to return home, and since then nothing further regarding the case has been learned.

Comment: The textbooks are silent regarding the effect of long continued use of silver on the conjunctiva of infants, and no similar case has been discovered in the literature.

The patient had a membranous conjunctivitis, probably pneumococcic, in the right eye first and then in the left, leading to ulcer formation and to loss of that eye. Silver nitrate was used in two and five per cent solutions, apparently for a long time. The lids became thick, and a chronic folliculosis ensued which did not yield to surgery. After the second surgical removal of the redundant tissue, ten per cent argyrol was used—how long, however, was not stated. Cultures showed a

mixed infection, no germ found was very significant, and all were probably secondary.

The case suggests Parinaud's conjunctivitis in its conjunctival chronicity and in the history of a preauricular adenitis, but there the similarity ends. The pathological report was most significant and valuable in the diagnosis of silver reaction in the conjunctiva.

Graefe[2] always held fast to the dictum that silver nitrate should never be used in diphtheric conjunctivitis, especially when the false membrane was well formed. Others, however, do not agree. Among these are Morax[3], who advises daily instillations of two per cent silver nitrate in membranous conjunctivitis; de Schweinitz[4], who advises, after the removal of the discharge with a solution of soda or of chlorate of potash, the cautious use of silver nitrate (Knapp) or of argyrol or protargol. Römer[5] however states that "as soon as the membranes have been cast off they should be removed carefully from the eye. No application of a caustic nature should be made to the conjunctiva while the inflammation is in this stage but after the formation of membranes has ceased, the conjunctival secretion has become greater in amount, and the lids have become movable, the application of one per cent silver nitrate is indicated."

Meyerhof[6] found 110 cases of membranous conjunctivitis in 1,500 cases of acute ophthalmia in Egypt, made up of twelve adults and ninety-eight children, the majority of which were under five years of age. A large percentage of these cases had trachoma. For treatment he chiefly used two per cent silver nitrate (how frequently was not stated). The dread of silver salts in membranous forms of conjunctivitis is, in his experience, baseless.

That silver nitrate, however, is capable of producing folliculosis of the conjunctiva in infants is mentioned by Collins and Mayou[7]. The authors say that "the subepithelial tissue consists of a loose reticulum of connective tissue with fine elastic fibrils in it. In the fornices it is filled with lymphocytes, thus producing a layer of lymphoid tissue. It develops during the first four weeks (postnatal), its rate of formation depending on the amount of irritation to which the membrane is exposed. If silver nitrate be applied to the conjunctiva at the time of birth, this layer of lymphoid tissue is fully produced by the end of the first week." They also state[8] that argyrosis is due to the deposition of granules of black pigment, chiefly around the fibers of elastic tissue, but also in the cement substance of the endothelial cells of the capillaries and smaller blood vessels.

Parsons[9] says in describing argyrosis: "Fine pigment granules ensheath the elastic fibrils without entering into any chemical combination. Some fibers remain unaltered. The adventitia of the vessels is free from staining, whilst the pigment is dusted over the media, lying thickly in the cement substance between the muscle fibers. In the capillaries, pigment is deposited in the cement substance between the endothelial cells."

Incidentally Parsons quotes Hoppe as finding no pigment intracellularly. Dr. Verhoeff's report is not in accord with this.

My interpretation of this case is a chronic conjunctival folliculosis encouraged by the presence of a very chronic and resistant membranous conjunctivitis and stimulated by the use of strong solutions of silver salts over long periods.

24 East Eighth street.

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[3] Morax. French Encycl. Ophth., v. 5, p. 728.
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[6] Meyerhof. Amer. Encycl. Ophth., v. 4, p. 3116.
[7] Collins and Mayou. Pathology and Bacteriology of the Eye, 2nd ed., p. 443.
[8] Collins and Mayou. Pathology and Bacteriology of the Eye, 2nd ed., p. 395.
[9] Parsons. Pathology of the Eye, v. 1, p. 111.

PIGMENTED LESIONS OF THE CONJUNCTIVA

N. M. Black, M.D., F.A.C.S., and F. Herbert Haessler, M.D.
MILWAUKEE

In the first case reported, the patient noticed increase in the size of a nevus, and the eye was hyperemic. A histological description of the excised mass is given. Several other nevi were left alone because they did not show signs of active growth, and this procedure seems to be in accord with the views of other writers. The controversy as to the epithelial or connective tissue origin of nevi is briefly considered. Read before the American Ophthalmological Society, April 30 to May 2, 1928.

In January of this year a white male aged thirty-five years presented himself for examination and treatment of a pigmented mass in the conjunctiva of his left eye. He had noted the dark area six months before and thought it might have increased somewhat in size. The eye had certainly become definitely more red, but there was no discomfort. No argyrol had been used in the eye.

Examination revealed a brown and black mottled mass about 2.5 by 1.5 mm. in area and about five mm. nasalward from the cornea. The conjunctiva was grossly hyperemic about it. Microscopic examination made it clear that there was a sharply defined, lobulated, yellowish mass in the conjunctiva, in which were fine and course pigment granules, doubtless melanin, closely packed near the center and sparser near the margin of the lesion. In the lower portion of the mass was a cyst behind which dilated conjunctival vessels were visible. Because of the size of the mass and the persistent hyperemia, it was excised. The eye remained hyperemic for weeks, but at the end of two and a half months it seemed externally normal.

Microscopical sections are described by Dr. Wm. Thalhimer as follows: "At one edge of the section the epithelium of the conjunctiva is thrown up into folds. The conjunctiva then shades rather abruptly into an area which appears to be bare of epithelium. Just beneath the surface are eight or ten small, irregular, cyst-like cavities lined by a low cuboidal epithelium. The cavities contain varying amounts of a blue-staining, granular material. In between these cyst-like areas are some structures that look like dippings down of the surface epithelium. There are also several thin-walled blood vessels, and several spaces which have somewhat the appearance of lymph spaces. Scattered in amongst all these structure is cellular infiltration made up of moderate-sized mononuclear leucocytes, some of which have the definite appearance of plasma cells.[1] At the place where the conjunctiva begins to shade into the other area described, there are found a large number of pigment-containing cells, alike in a portion of the conjunctival epithelium, in a crypt formed by a fold of this epithelium, and in the connective tissue beyond this field, as well as in the midst of the structures described. This pigment has the appearance of melanin pigment, although a stain for iron was not made.

"At no place is there definite invasion of the epithelium of the conjunctiva, and the nuclei of this structure are quite regular in size and appearance. The general appearance is definitely that of a small, chronically inflamed area, with some small microscopic cysts. The melanin-containing cells might be merely part of the inflammatory picture, but it seems to me that even in spite of the absence of any definite sign of malignancy, the presence of these melanin-containing cells is suspicious, and indicates that the patient should be watched very carefully."

Dr. Verhoeff, who was also kind enough to examine the sections, commented that the tumor was undoubtedly a nevus and unusual in that the epithelial elements predominated and that an epithelial cyst was found.

In this case it was rather obvious that we were dealing with a nevus, and its removal seemed clearly indicated. Since then three other cases have been seen in which the course to pursue was not so clearly evident.

The first of these was in a man of thirty-one years, who had a dense black mass in his conjunctiva, approximately 1.5 mm. in diameter and one mm. from the corneal limbus. It had been there for at least sixteen years, and several oculists had picked at it with a sharp spud in an attempt to remove a presumable foreign body. The mass had in no way caused him any trouble nor had it increased in size since he first noticed it, despite the manipulations. There seemed to be no particular indication for immediate removal, and we advised the man to ignore the lesion but to come for immediate attention if any change should take place.

In a second case manifestations were even less definite. A man of twenty-nine years had had a feeling of irritation in his eye for several weeks, and occasionally he thought the vision was blurred. There was hyperemia of the conjunctiva in the lower nasal quadrant near the limbus, and many fine brownish pigment granules were fairly uniformly dispersed through this area. Careful examination of the eye externally and ophthalmoscopically, as well as measurement of the refraction under cycloplegia, revealed no other deviation from normal. In the course of two months the lesion had not changed in any respect.

A woman of forty-eight years noted that the caruncle of her left eye had recently become red and swollen. On examination we found that the left caruncle was slightly larger than the right and projected considerably more from the lid-slit. Over its entire surface was a network of fine and rather more coarsely granular pigment masses, fairly uniformly distributed. Near the temporal edge was a rather obvious and fairly large cyst with two smaller cysts near it. The blood vessels throughout were moderately dilated.

As it was not clear to us on what to base our judgment as to how a pigmented lesion is to be managed, we thought it wise to bring before ourselves a summary of the beliefs of the profession as to these lesions. The facts regarding nevus of the conjunctiva up to 1904 were presented by Saemisch on the basis of his own experience and that recorded in the literature.

Nevus is probably always congenital, at least in its Anlage, and can be pigmented or unpigmented. Pigmented forms can occur in all parts of the conjunctiva and not infrequently near the limbus where it is exposed in the lid-slit. The lesion is usually quiescent up to puberty, and then it starts to grow with great rapidity, though growth may also start later in life or not at all. When a pigmented nevus begins to grow it may become very malignant and exhibit characteristics of carcinoma, whereas unpigmented nevus is believed to remain benign despite its progression in size.

Nevus of the conjunctiva, like that of the skin, has a perfectly typical structure. From the thickened epithelial layer in the diseased area columns of cells proliferate into the stroma, and from degenerative processes cysts may form in them. Between these columns and cystic areas masses of cells appear usually in circular or elongated areas. These are the characteristic nevus cells, and though they vary in size and form they usually are poor in cytoplasm and have a large darkly staining nucleus in contrast to the normal epithelial cells which have a larger cytoplasmic mass and a less dense nucleus. The pigment carrying cells are usually found in the very vascular stroma, as well as among the nevus cells themselves.

The chief controversy concerns the origin of the nevus cells. Unna and some other dermatologists derive these cells from the epithelium, while Ribbert was convinced of their mesoblastic origin. Recklinghausen believed them to be derived from the endothelium of the lymph vessels. Among ophthalmologists, Wintersteiner, Fuchs, and Foster state definitely that they could

not confirm the epithelial origin of these cells. Clinically there was a unanimity of belief that the nevus should be extirpated when increased in size. No mention is made of hyperemia alone as an indication for removal.

In 1909 Wolfrum published results of a most extensive study of pigmented lesions of the conjunctiva. With a binocular microscope he carefully examined well over one hundred patients with pigmented conjunctiva, and in many of them he excised pieces of the conjunctiva for histological study. He paid particular attention to the smaller lesions because the development could be more easily studied in them. Though he does not claim that every conjunctiva in which pigment granules are visible in the basal epithelium also contains nevus cells under the epithelium in the form of circumscribed cell masses of characteristic structure, he does point out that in every excised piece of conjunctiva which had had clinically visible pigment granules he also found characteristic nevus cells. He therefore concludes that in general it is correct to diagnose all pigmentations of the conjunctiva as nevus.

In the first stage of development there is a loosening of the protoplasmal connection of the basal epithelial cells and a proliferation of these cell groups into the connective tissue. The mass increases in size through amitotic cell division. These young cells are apparently able to wander somewhat and have the ability to generate pigment. In such cell nests of the nevus one finds many small groups of cells of varying size and shape which are filled with course pigment granules, sometimes in such quantities as to completely hide the nucleus. It is also demonstrable that the nevus cells have histolytic powers.

The connective tissue does not take part in nevus formation. On the contrary it disappears with the increase in size of the subepithelial structures. The elastic fibers resist lysis longest. However, it can probably not be doubted that the connective tissue offers some resistance to the heterotopic cell growth. To Wolfrum it seems unquestionable that nevus is a neoplasm of epithelial origin. It is usually benign but when it becomes malignant it is nevus carcinoma.

More recently, as summarized by Mary S. Knight, other evidence has been accumulated which confirms the belief that the nevus cells are epithelial cells and that they generate pigment granules. D. T. Smith worked with teased-out bits of pigment epithelium of the embryonic optic cup, and studied the development of the pigment granules under the microscope. In the cytoplasm colorless granules were seen to form, which became grey and finally black. This established at least two stages in the development of pigment, (1) the formation of colorless chromogen, and (2) the production of color in the chromogen. Chromogen granules were never seen in choroidal cells. In cultures, living fibroblasts were seen to have taken up pigment granules from broken epithelial cells.

By means of a substance allied to tyrosin and called "dopa," fresh bits of skin are turned grey, and this has been shown to be due to melanin granules in the cells. This reaction occurs in cells capable of producing melanin, even before pigment has appeared. The color of the cells of the pigmented nevus and of the pigment epithelium of the retina is increased when they are treated with dopa, but chromatophores of the dermis and choroid do not. Wherever investigated, melanin has been found to be produced only by epithelial cells.

As to the question of practical management, nothing has been brought forth to modify the view expressed by Saemisch, namely, that as long as the pigmented mass does not increase in size it should be left undisturbed. When malignant growth is initiated it becomes evident by an easily recognizable change in size of the tumor mass. One sees not only an area of conjunctiva in which are distributed pigment granules but an actual tumor mass circumscribed optically from the surrounding tissue.

When growth takes place the tumor

must be excised with sufficient margin of surrounding presumably healthy tissue, according to general surgical principles. Abscission is usually simple, though the base should be cauterized or treated with x-rays.

Sattler has reported favorable results with radiotherapy. He cautions against the use of small doses, because of the danger of stimulating the tumor to more rapid growth. When the tumor has proliferated into the orbit no time should be wasted with radiotherapy, but the orbit should be immediately exenterated.

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GLAUCOMA, AN HISTORICAL REVIEW

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The history of medical tradition and knowledge concerning glaucoma and its treatment is traced from antiquity down to the present day. Read at the meeting of the Pacific Coast Oto-ophthalmological Society, Santa Barbara, California, 1928.

The name "glaucoma" is derived from the Greek word glaucos: the greenish-yellowish discoloration of the dilated pupil. Hippocrates and his pupils knew this last stage of the disease. Galen says that the pain is caused by overfilling of the eyeball. It is mentioned that such patients see rings around lights. The meagerness of notes about this disease must not be taken as a proof that the ancient physicians have not made more accurate observations; for only small fragments of their writings have come down to us. These were worked up with admirable patience and accuracy by the late Professor Hirschberg[1] of Berlin. His History of Ophthalmology is indispensable for anyone who wishes to know the history of this branch of medicine. In 1891 Snellen[2] of Utrecht gave an excellent historical essay on the development of the knowledge of glaucoma. I shall quote extensively from him.

The first good description of acute glaucoma was given by Saint Yves, Paris, in 1772. Guérin[3] of Lyon (1769) writes: "When the vitreous humor is in too great abundance the pupil is dilated to its fullest extent and has almost lost its elasticity. Such patients complain of a deep dull pain at the back of the eye which extends sometimes to the front of the head. If all the remedies for that sort of hydropsia have been without success one comes to puncture of the eye in the sclerotic." This again is recommended by MacKenzie[4] of Glasgow (1830).

Of the very unfavorable prognosis in glaucoma, Sichel, formerly of Vienna, and at that time the leading oculist in Paris, wrote in 1841: "Cette maladie est complètement incurable" (This disease is completely incurable).

Desmarres declared glaucoma incurable even in 1858. The triumph of overthrowing this terrible prognosis was reserved for Albrecht von Graefe; but for the attainment of this result a better knowledge of the morbid changes which precede the final stage was indispensable, and the way thereto was opened by Hermann von Helmholtz by his great discovery of the ophthalmoscope in the year 1851.

"The results of ophthalmoscopic examination did not at first correspond to the expectations ascertained. Lens and vitreous were found to be far more transparent in the early stage of glau-

coma than had been supposed, and nothing was to be seen of the extensive choroidal changes which, according to theoretical preconceptions, underlay the disorder. Eduard Jaeger described and figured a peculiar change of the papilla in glaucoma, which we know to be an excavation, but which was regarded at that time as a globular swelling." We must keep in mind that they did not have such practical ophthalmoscopes with fine mirrors as we have today.

"Heinrich Müller made the first anatomical demonstration of the excavation of the papilla in glaucoma." About the same time Albrecht von Graefe discovered the venous and arterial pulse on the papilla, the latter perceptible only when the eye is extremely hard. Donders showed that the arterial pulse could also be induced in healthy eyes, by gradually increasing pressure on the globe, and that at the moment when the pulse appeared vision was temporarily abolished.

Bowman introduced (1862) the numerical measures of intraocular tension +1, +2, +3, and —1, —2, —3, as felt with the finger tips. After that time many efforts were made to measure the tension objectively, and with automatic registration. "Theoretically," writes Snellen in 1891, "the way of doing this has been determined, but in practice Bowman's method is still preferred, and rightly so, for tonometers are complicated instruments, which easily get out of order."

Since then tonometers have been so much improved that they are indispensable. Schiøtz brought out his instrument about 1910.

Graefe had observed that in staphylomatous eyes, which are usually hard, iridectomy was able to permanently lower the tension, and thereby to lead to a diminution of the staphyloma. As paracentesis had given only temporary relief he tried iridectomy in acute glaucoma (1856). His discovery that the deleterious course of the disease can be arrested by iridectomy is of priceless value.

"Although von Graefe, during fifteen years, performed iridectomy upon thousands of glaucoma patients with the most beneficial results, he strove in vain to find the key to the mystery of the cure. Shortly before his death, in his last work (1869), he reviewed his efforts up to that time, and declared himself highly satisfied with the benefits which his operation had conferred, but still quite unable to explain its mode of action.

"New observations and new facts were necessary before a new theory could be built. In the first place, certain physiological questions required an answer; the nutrition processes and the circulation of fluid in the healthy eye—how do they take place?"

A series of physiological researches, at the head of which stands the classical work of Leber, have established that the highly vascular ciliary body is the chief secreting organ of the eye. The freshly secreted fluid stands in close osmotic relation with that which is contained within the thin membranes of the vitreous body. A slight excretion of fluid occurs at the back of the eye from the vitreous body into the lymph spaces of Schwalbe in the optic nerve. But the principal stream passes over the lens and through the pupil into the anterior chamber, traverses the latter to reach the angle formed by the junction of the iris and the cornea, passes through the meshes of the ligamentum pectinatum, and by diffusion and filtration is taken up into the plexus of veins known as Schlemm's canal. The influence of the nervous system on the pressure of the fluid is indirect.

No less important were the new facts contributed by pathological anatomy. The most important point revealed by the examination of glaucomatous eyes is adhesion of the base of the iris to the periphery of the cornea. Adolph Weber considered that this adhesion was a secondary change, induced by the pressure of the abnormally swollen ciliary body. Whence comes, then, this abnormal swelling?

It often happens that a therapeutic remedy furthers our knowledge of a

morbid process. The employment of an active remedy is a physiological experiment, the effect of which must be taken into account in analyzing the nature of a disease. Thus, the fact that the tension of the eye is lessened by iridectomy must be brought into accord with the explanation of glaucoma. There is another remedy the discovery of which has proved highly important from both the therapeutic and the etiologic point of view.

Graefe himself noticed that in most cases of glaucoma atropin does harm, inducing an increase of pressure with all its evil consequences. Laqueur, of Strassburg, asked himself the question to what extent an action antagonistic to that of the mydriatic could be obtained by the use of a miotic. The result entirely met the expectation; the miotic, as it contracted the pupil, lowering the tension, if this was abnormally high.

These effects of mydriatics and miotics on glaucomatous tension can be satisfactorily explained in connection with the absorption of fluid at the angle of the anterior chamber. The thickening of the iris during mydriasis promotes closure of the filtration angle: contraction of the pupil draws the iris away from it.

According to Priestley Smith, a large lens is a predisposing factor in the production of glaucoma.

In 1888, Snellen suggested that strain on the accommodation tended to induce glaucoma. At the Seventh International Congress at Heidelberg in 1888, Snellen explained how, in his opinion, the influence of accommodation might take effect. "In the young eye, during accommodation for a near point, the diameter of the lens is reduced to about the same extent as that of the contracting ciliary circle. The circumlental space remains about as wide as it was before, and the zonula remains tense as before. But the conditions are quite different in advanced life, when the elasticity of the lens is lost; the ciliary circle contracts, but the form and size of the lens remain unchanged. The ciliary processes are thereby pressed against the lens and the zonula is slackened."

This idea finds confirmation in the pathological observations of Priestley Smith: "In such cases the ciliary processes are in close contact anteriorly with the iris, internally with the margin of the lens." If the foregoing is correct, a timely and careful correction of refractive and accommodative errors must manifestly tend to restrain glaucoma.

The beneficial effect of iridectomy was attributed at first to excision of a piece of the iris. Others held that the main element was the peculiar wound in the margin of the sclera. Stellwag, in 1868, was the first to substitute sclerotomy for iridectomy, and was followed by DeWecker and Quaglino. "Should it be proved, as I think it will," wrote Snellen in 1891, "that the essential part of the operation is the scleral wound, it will still be necessary in many cases to combine an iridectomy with it, because when the pressure is high the iris very easily prolapses, and is apt to check the free escape of the fluid from the chamber." This could be avoided by the basal iridectomy of Hess.

"In my opinion," continues Snellen, "the effect of our glaucoma operations depends on restoring the perilenticular space through this anterior ectasia of the outer coat of the eye."

Soon after Graefe's introduction of iridectomy for glaucoma, modifications sprang up.

Critchett, London, in 1858, and Coccius, Berlin, in 1859, combined iridectomy with iridencleisis. This was soon abandoned on account of the danger of irritation and infection; but a modification has lately been introduced and is practised at the Lindner (formerly Dimmer) eye clinic in Vienna.

Hancock (1860) and later Solomon recommended intraocular myotomy, that is, they cut through the ciliary muscle, claiming good results. Argyll Robertson (1876) introduced trephining of the sclera at the junction of the ciliary body with the choroid.

De Vincentiis, Italy, introduced

(1895) the internal sclerotomy. With a special knife he cut the sclera from the iris angle outward.

In 1905 Heine introduced cyclodialysis.

Of the operations designed to establish drainage from the anterior chamber under the conjunctiva are best known: Lagrange's sclerectomy (1906), the trephining operation of Freeland Fergus (1909), who combined it with cyclodialysis, and Elliot's[5] sclerocorneal trephining, usually combined with iridectomy.

Harry Gradle, Chicago, described at the American Medical Association meeting in 1927 a conjunctival drain of the anterior chamber.

Sometimes the priority of an operation cannot be established. Men in different countries may have done an operation at the same time without knowing of each other. Wilmer[6] of Baltimore pointed out at last year's Oxford Congress that over sixty operative procedures with many modifications were on record, all devised solely for the purpose of reducing intraocular tension.

Based on the supposition that the hypersecretion brought on by an irritation of the sympathetic is the cause of glaucoma, Abadie of Paris (1897) recommended removal of the superior cervical ganglion, and Jonnesco of Bucharest removed a larger part of the sympathetic. While some good results were reported, the dangers of the operation seem too great. Allard (1899) claimed good results from galvanization of the cervical sympathetic.

Rohmer (1902) extirpated the ciliary ganglion in seven cases of absolute glaucoma, giving relief.

Continuing Sluder's experiment, Hiram Byrd[7] reports that cocainizing the nasal ganglion on the same side gives temporary relief in glaucoma, and he advises alcohol injections. Massage for glaucoma was recommended by Pagenstecher in 1878.

At last year's meeting of the American Medical Association, Park Lewis of Buffalo reported gratifying results from the treatment of inflammatory glaucoma by radiant heat from the carbon filament of an electric globe.

Turning now to the treatment of glaucoma with medicines, I find that in 1830 MacKenzie, in his famous book on the diseases of the eye, made the following (now) surprising statement: "Dilatation of the pupil with belladonna greatly improves the vision of most glaucomatous eyes and may be employed day by day." Graefe, as mentioned before, had observed the harmful influence of atropin in glaucoma. After the investigations of Laqueur miotics were soon generally used. Pilocarpin was first introduced in 1875, eserine in 1876.

In 1900, by painstaking experiments, Wessely[8] showed that synthetic suprarenin or adrenalin in subconjunctival injections caused mydriasis and contraction of the vessels of the ciliary body, thus diminishing the secretion from that structure, and that it lowered the tension. In 1900 Darier, of Paris, reported in a few cases of glaucoma beneficial influence from adrenalin drops.

Hamburger[9] continued the experiments with subconjunctival injections of suprarenin, and he has used it therapeutically against glaucoma since 1923. Good results were reported by a number of men, but this drug had the great drawback of increasing the general blood pressure. In 1925 Hamburger introduced glaucosan for subconjunctival injections. This has the local constricting effect without in any way affecting the blood pressure. To get away from the necessity of subconjunctival injections he later introduced strong glaucosan drops ("Linksglaucosan" or levoglaucosan), which do not affect the blood pressure but have a very strong local effect.

Hamburger compares the effect of glaucosan to that of an elastic bandage around the extremities. The first effect is to press the blood out of the uvea. This anemia is succeeded by a strong arterial hyperemia exactly as in the case of Esmarch's anemia. "It has long been a well known and very interesting fact that iritic or cyclitic eyes

are softer than normal (as a rule). This is the paramount principle in the treatment of glaucoma by softening the eye. A change for the better will set in as soon as we succeed in turning the venous hyperemia into an arterial one."

In former experiments Hamburger had found that touching the limbus with nitrate of silver stick caused iritis and lowered tension. This had been used at Arlt's clinic, Vienna, in the seventies.

Our own experiences with levoglaucosan in a small number of cases have been very encouraging. They will soon be published. I give you one example: A man of seventy-six years, with only one eye, came with a tension of forty mm. (Schiøtz). This was lowered and was kept below twenty-five mm. with miotics for eighteen months. Suddenly the tension rose to thirty-two mm., and could not be lowered. Levoglaucosan used three times in three weeks brought it down and has kept it down below twenty-five mm. for the last few months.

For acute glaucoma Hamburger has introduced aminglaucosan, as eye drops, which he declares to be the strongest miotic in existence. One single drop of a two to ten per cent solution will narrow a pupil previously dilated by atropin or even scopolamin or glaucosan.

Cantonnet in 1904 and Martin Fischer about 1910 tried to influence glaucoma by the introduction of osmotic substances into the system by mouth or rectal infusion. Martin Fischer claimed softening of the hard glaucomatous eye after subconjunctival injections of sodium citrate. I tried this conscientiously without result.*

Thiel[10] of the University eye clinic in Berlin recently published very interesting experimental and clinical observations as to the influence of ergotamin on the intraocular tension in glaucoma. He points out that the physiological exchange of fluids in the interior of the eye depends on a series of factors. One of these is the sympathetic nerve. Irritation of the sympathetic nerve increases the intraocular tension, paralysis of the sympathetic decreases the intraocular tension and the permeability of the blood vessels. This has been proved by excision of the superior cervical ganglion. Thiel found that ergotamin injected intravenously in rabbits caused paralysis of the sympathetic nerve endings in the iris muscle. This diminishes the permeability of the uveal vessels and decreases the intraocular tension. He is inclined to consider such glaucoma as a vasomotor neurosis. Ergotamin, on the market as gynergen, is either injected subcutaneously or taken by mouth in the form of tablets. Thiel and others report good results, especially in glaucoma simplex and in iritis with increased tension. In glaucoma gynergen seems to increase the effect of miotics.

Heim[11] of Bucharest points out that hypersensitiveness of the sympathetic is coexistent with lowered sensitiveness of the parasympathetic, and that this again coincides with a diminished amount of cholin in the blood. In Addison's disease the blood contains a small amount of adrenalin but a large amount of cholin. Blood serum from such a patient, injected subcutaneously, reduced the tension in a case of glaucoma, previously operated upon by Elliot's method.

Schmidt[12] of Bonn reported on results of the Marx water ingestion test for ascertaining the presence or absence of pathological conditions in the capillary endothelium. Out of sixteen glaucoma simplex patients so tested, fifteen showed disturbance of the capillary endothelium.

Vom Hofe claims that the action of the drops used for glaucoma is only partly based on their dilating or narrowing influence upon the blood vessels, and argues that they probably affect the endotheiium of the blood vessels.

From these quotations it must be

* In the discussion Dr. Jean called my attention to W. D. Sansum's report concerning rapid reduction of the intraocular tension in glaucoma by timed intravenous glucose injections. Journal American Medical Association, June 23, 1917.

manifest to all that a good deal of work is being done to clear up this mysterious disease. Let us hope that remedies may be found to prevent and cure glaucoma without operation. Butler, at the last Oxford Congress, said: "The general effect of an operation upon decrepit and elderly persons is an important factor which must not be overlooked."

I further quote Meller[13] of Vienna: "Generally only operations for acute inflammatory glaucoma are known to give a good prognosis. With all chronic cases, however, we have to be extremely careful in our prognosis. The more operations we perform, the more surprises we live to see and the more careful we shall be in our predictions."

Let those of us especially who are connected with medical schools consider these new remedies with an open mind, try them carefully, and report concerning the results obtained.

Medico-Dental building

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X-RAY THERAPY AS A DIAGNOSTIC AGENT IN ORBITAL TUMORS

With case report

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Exophthalmos had developed gradually for years. X-ray examination of the orbit indicated a soft tissue mass which clouded the entire right orbit and right frontal sinus. There was marked bone destruction. Fractional administration of about three-fourths of a dose of deep x-ray therapy was followed by complete recession of the growth, with recovery of normal external appearance. There has been no relapse in the course of a year. The second part of the paper groups orbital tumors diagnostically upon the basis of their response to x-ray therapy. See page 808.

Clinical description of case: Dr. Edgar F. Conant of Denver, by whom the patient whose case is the nucleus of this paper was referred, has furnished the writer with the following clinical data:

"Mrs. C.M.B. came for examination in October, 1924, because of an advanced exophthalmos of the right eye. The patient had been in the care of a confrère who had presented her before this society in December, 1923, at which time roentgenograms of the orbits and sinuses and also the blood Wassermann had been reported negative. Her chief complaint in the beginning of the affection had been diplopia, but by October, 1924, the diplopia had disappeared. With correcting lenses the vision of each eye at that time was 20/20. The ophthalmoscopic examination was negative. The tension was slightly elevated.

* Roentgenologist.

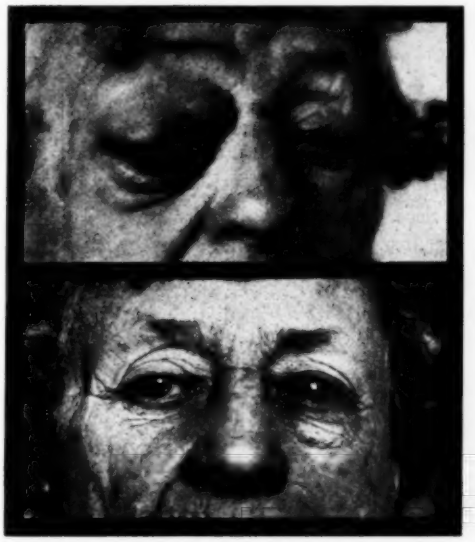
The patient was not seen from late in 1924 until May, 1927. The exophthalmos had by then increased so that the closed lid touched her eye glass. The vision was reduced to perception of light. Pain was never a marked symptom, although sometimes a dull ache and the sensation of a foreign body were experienced. Epiphora had also been annoying. Early in June, 1927, a soft tumor mass about the diameter of one's forefinger became noticeable above the right lid and to the nasal side. Medication with thyroid extract and potassium iodide had been used, with no appreciable benefit. The fundus examination was unsatisfactory because of hazy media, and the disc outline could not be made out. Because of the offensive cosmetic appearance, the steady advance in the size of the tumor, and the comparative blindness of the eye, enucleation and extirpation of the tumor mass were advised.

A preliminary x-ray examination of the orbit, however, was considered advisable, and this was done on June 29, 1927, by Drs. Stephenson and Allen. They reported: 'Clouding of the entire right orbit and right frontal sinus by a soft tissue mass. Marked bone destruction into the right frontal and ethmoid sinuses and also at the outer lower quadrant of the orbit.' On their recommendation x-ray treatments of the orbital mass were instituted.

Within a very short time the entire swelling had subsided to such a degree that it would be very difficult by casual observation to tell which was the affected eye."

Description of x-ray treatment: The patient, Mrs. B., was given one-fifteenth of a dose of deep therapy (200 kv., 30 ma., 80 cm. distance, .5 mm. copper plus 2 mm. aluminum filter) directly into the right eye on July 2, 1927, with another one-fifteenth dose on the fifth and sixth respectively and an additional one-sixth of a dose on July seventh.

On the morning of the eighth the patient and her daughter volunteered the information that the patient had had the first good night's sleep in months. By July sixteenth about three-fourths of a complete dose had been administered, partially through the eye and partly through the right temple. By July twentieth the eye had receded very markedly. On August 29, 1927, the eye appeared to be grossly normal. (Fig. 2, below).



Orbital tumor. (Allen.) Above, appearance of right eye July 2, 1927, when x-ray treatment was started. Below, condition August 1, 1928. The condition here shown is identical with that on August 29, 1927, forty-four days after completion of three-fourths of a complete dose of x-ray, but a photograph taken on the earlier date was technically less satisfactory for reproduction.

The original dose of x-ray was repeated fractionally between September 6, 1927, and November 4, 1927. No more treatment of any kind has been rendered up to the present time, August 1, 1928, and the eye remains of normal appearance.

Discussion: It is a well known fact that various neoplasms of the same microscopic diagnosis will react differently to the same amount and kind of x-ray treatment in different patients and different locations. Despite this fact, however, it is believed that the therapeutic use of the x-ray will render valuable evidence in the effort to make

a preoperative diagnosis of the nature of orbital tumors.

Ewing[6] has given very strong evidence supporting the idea that control and destruction of neoplasms by roentgen or radium therapy depends to some extent on the reactions of surrounding normal tissue to irradiation. In the orbit the reaction of normal tissue to x-ray as a possible source of tumor destruction is at a minimum because of the type of orbital tissue, and because of the proximity of bony walls. There is less likelihood, therefore, of producing in the surrounding normal tissue an irradiation reaction such as Ewing describes as having destructive or controlling influence on a neoplasm; so that we have little except the specific reaction of the growth itself to account for any subsidence.

The present case is discussed as an example of the aid afforded by therapeutic irradiation in determining the orbital basis of a proptosis. It also demonstrates the value of irradiation as a main therapeutic instrument in certain types of neoplasm.

In the following classification the various orbital tumors are grouped according to diagnostic evidence, using the effect of irradiation as a background:

Group 1, tumors nonsusceptible to irradiation over any length of treatment or pause. Any favorable response to x-ray therapy, however delayed, rules out tumors of this group.

Cysts[1, 8, 12, 15, 37]—Some cannot be diagnosed clinically. Most dermoids can.

Polypi[15]—Not always found clinically.

Inflammatory masses[16, 20, 21, 36]—Do not always respond to medication. Iodides, antisyphilitic treatment. May appear at any age, may grow very slowly.

Teratoma (adult type)[18, 19, 23]—Also is congenital though may not be manifest until later life.

Lipoma[22]—May show yellowish fatty appearance but may be obscure.

Group 2, tumors very susceptible to x-ray. Often definite response within ten days during fractional dosage irradiation treatment.

Lymphosarcoma[24]—Generally earlier in life, multiple glandular involvement, blood changes, rapid growth, probably only metastatic in eye.

Carcinoma of lacrymal gland, embryonal type[1, 16, 9]—Occurs only in lacrymal gland as primary tumor, often grows very slowly with slight symptoms until some venous or lymphatic blockage.

Metastatic carcinoma (embryonal type)[16]—In a case of three years standing, as here reported, primary tumor site should have been manifested.

Group 3, tumors susceptible to irradiation, response usually slow. Any marked response to x-ray therapy in the first few days of fractional dosage would be evidence against a tumor of this group.

Lymphangioma[1, 26, 31, 34, 35]—Usually conjunctival, do not pulsate, often impossible to make preoperative diagnosis.

Cavernous angioma[10, 26, 29, 11, 31, 32]—Generally pulsate, although some do not.

Metastatic thyroid[16]—Adult life, primary focus often not discernible during life of patient.

Myxoma[13, 24]—Generally in young, rapid growth.

Endothelioma[1, 2, 27]—Carcinoma of lacrymal gland often called endothelioma but responds more slowly to x-ray therapy as a rule.

Perithelioma (sarcomatous type)[14]—Usually, however, in younger patient than this case.

Sarcoma (soft tissue)[12]—Usually in younger patients.

Glioma (neuroepithelioma)[28]—Adult age tumor—embryonal type may respond to irradiation.

Neurofibroma[2]—At any age—Probably only very slow response to x-ray.

Chondrosarcoma[24]—Probably very slight response in size to irradiation.

Group 4, tumors ruled out by diagnostic x-ray examination.

Exostosis[3, 24]—Originating in orbit would show plainly in x-ray plate (would not respond to x-ray therapy).

Osteoma[3, 15, 24, 33, 38]—Originates generally outside of orbit, but would be seen in x-ray plate as density encroaching on orbit.

Osteogenetic sarcoma [25, 15, 30]—Of three years standing would show more bone destruction and bone production on x-ray plate. Generally in young also.

Group 5, tumors ruled out by clinical evidence alone.

Lymphoma[16, 17, 21]—Practically always bilateral, generally responds to iodides and other medication, usually some blood changes or other general symptoms and signs.

Encephalocele[15]—Always congenital, pulsating, fluctuating protrusion at inner angle.

Conclusions: The application of the above grouping to this particular case would make us inclined to place it in group 2, because the patient responded within six days to extremely small doses of high voltage x-ray therapy.

If group 2 is the proper one, then of the three most susceptible eye tumors, because of other factors mentioned, carcinoma of the lacrymal gland would be the most likely selection in this case.

As suggested above, it is quite possible that due to unusual cellular characteristics at certain stages of its growth, a tumor of group 3 might in a rare instance demonstrate a susceptibility which would place it at that stage in group 2. Thus for general practical application, the above grouping would render its most distinct diagnostic evidence as between group 1 and the general list included in groups 2 and 3.

Summary:

(1) Orbital tissues are of a nature which renders the response of a tumor to irradiation more specific for the type of tumor than in many other portions of the body.

(2) Response to irradiation may give important evidence in making a preoperative diagnosis.

(3) Certain malignant tumors may best be handled with irradiation as the main therapeutic agent.

452 Metropolitan building.

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THE LITERARY PHASE OF OPHTHALMOLOGY

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DENVER

Ophthalmologists of intelligence and experience should expect to play an active part in the educational life of their communities, by contributions to medical society programs, by sharing in discussions, or by talks before laymen. The writer or speaker who has no "literary phase" in his makeup will fail to present his testimony with due force. An interest in general literature of the better sort tends toward finer workmanship in medical writings. Robert Louis Stevenson, Michael Foster, and Thomas Henry Huxley are quoted as examples of elegance and clearness. The problems of ophthalmic journalism in the United States are discussed, and emphasis is laid upon the importance for physicians of training in literature and in foreign languages. Abbreviated from an address read before the Chicago Ophthalmological Society, January, 1928.

What do we mean by the literary phase of ophthalmology? Broadly speaking, literature is the mass of printed or written matter in which are more or less permanently preserved the knowledge and wisdom of the human race. In a more limited sense the term "literature" is applied to the minor forms of general literature as distinct from writings upon technical subjects. But here and there may be found passages of technical literature which possess such qualities of literary art that they can be included under either definition.

There are few who will deny the value of good literature in the general sense, as represented by biography, history, poetry, books of travel, the novel, the short story, or the essay; although the subtler excellencies of the great writers of the world may appeal to a rather limited circle. But the average man or woman in ophthalmological practice may say: "Why should I bother my head about what is good and what is bad in a literary sense? I have nothing to write about. It would be mere presumption for me to write. I am glad to avail myself of the original thoughts of others in my profession. But I myself have nothing original to say."

Yet it is one of the privileges of our profession that each one of us sees from time to time something that is different from what anyone else ever saw, or that is at least so unusual that it is worth recording. If a surgeon encounters an exceptional form of retinal disease the publication of which may contribute to an understanding of other cases previously reported, he will be in some degree a public benefactor if

he places his case on record. But, if he allows the details to lie buried in his own brain or even in his office files, he is failing to take his proper part in medical education, he is in a sense an asocial member of the community.

Any ophthalmologist of intelligence and experience should expect from time to time to play an active part in the educational life of his own community, by contributions to his local medical society programs, by a share in discussions, or by talks on ophthalmology before bodies of laymen. And, whether what is said is committed to writing or not, whether or not therefore it could be spoken of as actual "literature", the principles involved are the same, and the writer or speaker who has no "literary phase" in his makeup will fail to present his testimony with due force and effect.

One may write a good clinical contribution, or make a well ordered medical talk, without being deeply interested in classical literature; but in general it may be said with a reasonable show of truth that the existence of a refined literary phase of ophthalmology presupposes a literary phase in the ophthalmologist. Other things being equal, the ophthalmologist who interests himself in general literature of the better sort, not merely reading it for a diversion, but devoting some energy to critical consideration of its finer characteristics, will make a better job of his contribution to ophthalmic literature than the man who does not give a snap of the fingers for anything superior to the average twaddle which he reads from day to day in the newspaper column.

What are the essential attributes of literary art? The first requirement is that the writer shall have something to say. After that we may mention plan, or orderliness in arrangement. This is very much more complex and occult in some of the products of general literature than in scientific statement. The novelist or dramatist or poet is not always expected to "carry his heart on his sleeve", but it is proper and even very desirable for the medical writer to do so.

Directness and clearness of statement are most desirable. The man who affects obscurity of style in medical literature is a pest. He who has a clear brain does not commonly clothe his thought in obscure language.

A vital part of clarity of statement is the right use of words. Some of the lesser departures from accuracy in speech are of no great fundamental importance in conversation, but they may produce an unpleasant impression in the reader. One might write an essay on incorrect usages in medical literature, such as the use of the word "case" as synonymous with "patient"; the employment of wrong singulars like "phenomena", "media"; indulgence in Latin names for diseases in which feminine adjectives are inadvertently associated with neuter nouns, and the like. But this perhaps would be mere quibbling.

How shall the physician, including the ophthalmologist, improve the literary phase of his activities? Not merely for this purpose, but that we may be broader men and women, with keener sympathy, understanding, and insight, it is good to read the great masters of the world's literature. Beyond this it is to be recommended that we study the classics of scientific writing from such thinkers as Darwin and Huxley, the latter of whom is finer in the sense of literary form. And again, we have within our own specialty, if we look back through the last fifty or one hundred years, numerous examples of elegance, reasoning, and clear unfolding of scientific truth.

Here and there in general literature are fascinating examples of fine writing based upon the layman's reaction to scientific investigation. These are fascinating to the student in that they tend to awaken, or to release, the broad imaginative view of life and the universe which close acquaintance with scientific detail in a limited field of science may leave dormant.

One of the finest examples of this kind with which I am familiar is Rob-

ert Louis Stevenson's essay "Pulvis et Umbra" (Dust and Shadow). Stevenson refers to the universe as the "Kosmos".

"But take the Kosmos with a grosser faith, as our senses give it to us. We behold space sown with rotatory islands, suns and worlds and the shards and wrecks of systems: some, like the sun, still blazing; some rotting, like the earth; others, like the moon, stable in desolation. All of these we take to be made of something we call matter: a thing which no analysis can help us to conceive; to whose incredible properties no familiarity can reconcile our minds. This stuff, when not purified by the lustration of fire, rots uncleanly into something we call life; seized through all its atoms with a pediculous malady. . . . .

"In two main shapes this eruption covers the countenance of the earth: the animal and the vegetable; one in some degree the inversion of the other; the second rooted to the spot; the first coming detached out of its natal mud, and scurrying abroad with the myriad feet of insects, or towering into the heavens on the wings of birds. . . . . To what passes with the anchored vermin, we have little clue; doubtless they have their joys and sorrows, their delights and killing agonies; it appears not how. But of the locomotory, to which we ourselves belong, we can tell more. These share with us a thousand miracles: the miracles of sight, of hearing, of the projection of sound; things that bridge space; the miracles of memory and reason. . . . ."

And so on.

And the conclusion of the essay: "Let it be enough for faith, that the whole creation groans in mortal frailty, strives with unconquerable constancy—surely not all in vain".

Less imaginative, but rich in the order of scientific imagination which is full of ultimate utility and stimulus, is a passage from Sir Michael Foster, the British surgeon and physiologist:

"There is written clearly on each page of the history of science, in characters which cannot be overlooked, the lesson that no scientific truth is born anew, coming by itself and of itself. Each new truth is always the offspring of something which has gone before, becoming in turn the parent of something coming after. In this aspect the man of science is unlike, or seems to be unlike, the poet and the artist. The poet is born, not made. . . . . The man of science is not thus creative: he is created. His work, however great it be, is not wholly his own: it is in part the outcome of the work of men who have gone before. Again and again a conception which has made a name great has come not so much by the man's own effort as out of the fullness of time. Again and again we may read in the words of some man of old the outlines of an idea which, in later days, has shone forth as a great acknowledged truth. From the mouth of the man of old the idea dropped barren, fruitless; the world was not ready for it, and heeded it not; the concomitant and abutting truths which could give it power to work were wanting."

These quotations are in a more sonorous style than will or should commonly be affected in our scientific communications. But they are appropriate to the occasions for which they were employed, and a sense of rhythm and dignity and rightness of language in such passages as these has an influence for good in the choice of language for any occasion.

Few scientific men have filled a larger space in the public eye of their day than Thomas Henry Huxley, who, forty years or so ago in England, stood in the forefront of the real struggle between the advocates of fundamentalism and of evolution. As an example of a style which was always clear, always logical, and always elegant, although commonly not rhetorical, I may quote the following from Huxley's essay entitled "Three hypotheses respecting the history of nature":

"It results from the simplest methods of interpretation, that, leaving out of view certain patches of metamorphosed rocks, and certain volcanic products,

all that is now dry land has once been at the bottom of the waters. . . . . As we go back in time, we meet with constant alternations of sea and land, of estuary and open ocean; and, in correspondence with these alternations, we observe the changes in the fauna and flora to which I have referred.

"But the inspection of these changes gives us no right to believe that there has been any discontinuity in natural processes. . . . . That there is no absolute break between formation and formation, that there has been no sudden disappearance of all the forms of life and replacement of them by others, but that changes have gone on slowly and gradually, that one type has died out and another has taken its place, and that thus, by insensible degrees, one fauna has been replaced by another, are conclusions strengthened by constantly increasing evidence."

Many excellent models of scientific writing are to be found in the literature of our own specialty. I believe we pay too little attention to the earlier literature of medicine as a whole and of ophthalmology in particular. From an occasional review of publications falling within the modern epoch, we should acquire a juster appreciation of the men who preceded us, and a greater capacity for self-criticism in regard to proposals which arise from time to time, apparently new but really nothing more than repetition of ideas which saw the light many years earlier.*

Among the texts illustrating the history of ophthalmology, Fielding Garrison lists a clinical lecture on astigmatism, in 1879, by William Thomson of Philadelphia, who studied cases with S. Weir Mitchell, novelist and neurologist. Thomson had particular reference to "symptoms not fairly described in the various textbooks under the general head of asthenopia, and indicative of some serious disturbance of the nervous centers". These are enumerated as "pain over the brows, in the temple, occipital region of one or both sides, and vertex, with a sense of fullness, amounting to vertigo and nausea, mental depression and irritability of temper, inability to apply the mind, as in reading and writing; insomnia, loss of appetite, a fear of some impending apoplexy or epilepsy, general nervous prostration, and, occasionally, choreic twisting of the muscles of the head and face".

It is comforting to learn that Thomson knew one aspect of the optometrist question much as we know it today. After telling of the relief afforded to a patient with three diopters of mixed astigmatism, who had suffered from some of these unusual mental symptoms, Thomson says that this patient, after nine years of comfort, went to France and there ordered from a celebrated optician a pair of lenses in pebble instead of glass. "The optician, thinking he could grind the lenses more conveniently than by following my formula, undertook to arrange the quantities differently, and ground other curves. . . . . Mr. C. brought them home . . . . when, although he saw clearly with them, his old symptoms of congestion returned so severely, time after time, that he was compelled to hold his head under a cold water douche to obtain relief." Thomson gave him a second pair "made from the proper formula, and again all his vertigo and headaches disappeared".

In the literary phase of ophthalmology, the greatest field for improvement, and the field to whose improvement the profession as a whole may contribute most, is that of medical journalism. In the United States and Canada, we have only two eye journals of importance, the Archives of Ophthalmology founded by Herman Knapp, and the American Journal of Ophthalmology. What are in this country the problems of quality in ophthalmic journalism to which we need to direct our attention?

In the American Journal of Ophthalmology, we have three main departments, the original articles, the reports

* Dr. Edward Jackson, who has been kind enough to look through the manuscript of this address, points out that Bowman, Donders, Helmholtz, Hughlings Jackson, and Gowers were great in the way they wrote as well as in the truths which their writings brought before the medical profession.

of society proceedings, and the abstract department. As to the original articles, I shall not say much. Many of them are of excellent quality. Perhaps their weakest feature is lack of adequate attention to previous publications on the special topics dealt with. I recently received for the Journal a rather elaborate report of some careful research work, accompanied by a number of illustrations but not a single reference to the work of other authors; notwithstanding the fact that this particular problem has again and again been made the subject of exhaustive research in the laboratory and that these investigations have been published at great length, especially in the German journals. The author of the paper has been a regular recipient of the Ophthalmic Year Book, in which the various papers on this subject were given appreciable mention and were carefully indexed.

We need more short reports of cases of special interest. For many of the younger ophthalmologists it is not necessary to wait until such cases appear in their private practice. By arrangement with their seniors in various institutions, it is quite possible to utilize interesting material encountered in those institutions; and there are few better ways for the younger ophthalmologist to "feel his feet" in the profession than by contributing in this way to periodical literature.

The monthly meetings of ophthalmological societies play an extremely important educational part in the lives of practicing ophthalmologists. From long experience as secretary of an ophthalmological society, I am impressed with the idea that reports of cases and of the discussions which follow these reports should be vigorously edited before they are sent for publication. Since the space available is not unlimited, compression is highly desirable, and yet essential facts should not be omitted.

The Ophthalmic Year Book was certainly one of the most useful works of reference on ophthalmology in the English language. Now that it is extinct, I conceive the provision of as adequate a substitute as possible, in the form of a comprehensive abstract department, to be one of the most important duties of the American Journal of Ophthalmology.

American medicine and surgery are making very rapid strides, and there can be no question that in many departments we are equal to or ahead of the best in any other part of the world. At the same time, speaking at least as regards ophthalmology, a greater volume of original material is published in foreign languages than in the English and American literature combined. The surgeon who does not read any foreign languages and for whom the foreign field is not reasonably well covered in the form of abstracts in English, is therefore decidedly limited as to acquaintance with ophthalmological progress.

The provision of reliable abstracts is not free from difficulties. Prejudices created during the war checked the study of German in our public schools, and the supply of young men who are familiar with that most important language is therefore none too adequate. That translations may at times be ridiculously unreliable was demonstrated during my editorship of the Ophthalmic Year Book. The use of sutures made of woman's hair was once reported as "ocular surgery in horses". An ocular syndrome related to a lesion of the tegmentum was given as a "syndrome of the inferior part of the protuberant skull". And so on.

For most physicians it is difficult to take up the study of foreign languages after entering into active practice. Among universal preliminary requirements for the medical career I should be glad to see a thorough analytical and critical acquaintance with the writing of English prose, enough of Latin to enable the reader or writer to appreciate the origin and correct use of words of Latin form or derivation, and ability to read at sight, with moderate use of a dictionary, at least in German, but preferably in both German and French. It may be added, however, in

this connection that a great deal of research work on ophthalmology is being published today in Italian.

The work of the younger ophthalmologist, or of any ophthalmologist, in preparing abstracts from foreign journals not only adds to the educational facilities of the profession at large, but is of great developmental advantage to the translator; by acquainting him with the literature, by increased ability in the use of his own language, and by the gain in personality which comes from service and from a sense of contact with a noble profession.

If I may be allowed a little play on words, the best type of optimist is a meliorist, that is to say, he is not the man who thinks that everything is all right, is best and for the best, but the man who believes in making things right and does what he can to that end. The lesson of Stevenson's essay is that, in the presence of many coldly logical reasons against striving, it is natural to humanity to keep on striving—"groans in mortal frailty, strives with unconquerable constancy". The purpose of periodical medical literature, including that on ophthalmology, is to add to the common fund of knowledge and inspiration.

530 Metropolitan building

NOTES, CASES, INSTRUMENTS

THE "TRIPLE LIGHT" AS A PRACTICAL METHOD OF PERIMETRIC ILLUMINATION*

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PHILADELPHIA

The importance of the practice of perimetry in the diagnosis of diseases of the visual tracts, as well as of intraocular diseases, needs no discussion.

The practical use of the instrument requires:

(1) ideal illumination, i.e., bright daylight, unclouded sky, and northern exposure;

(2) further, for comparative study of the perimetric fields in any given case or series of cases, that these be taken under the same circumstances, i.e., at the same hour of the day, and with the same degree of illumination.

These ideals, impossible of realization, have stimulated a search for a type of artificial illumination, constant at all times, of simple construction, easily installed, readily applied to the perimeter one already possesses, conveniently manipulated, and, finally, giving absolute elimination of all shadows.

The "triple light" is presented for approval because it has fulfilled each of these requirements. It consists of three tabular reflectors, each containing two fifty-watt daylight bulbs, behind which are placed ribbed mirror reflectors, and in front of which is a diffusion glass screen. These tubular reflectors are arranged on a wood panel, one on each side, suspended on arms extending fifteen inches from the panel, thirty-eight inches from the floor, and the third placed horizontally above, suspended on arms extending twenty-five inches from the panel. This arrangement gives an evenly balanced illumination.

The side reflectors are hinged for quick adjustment, and to turn aside for the convenient seating of the patient. The top reflector arms are jointed in the center to permit adjustment of the height of the reflector by raising or lowering the forward half. Each reflector may be rotated on its axis into the desired position.

Finally, in its application, the peri-

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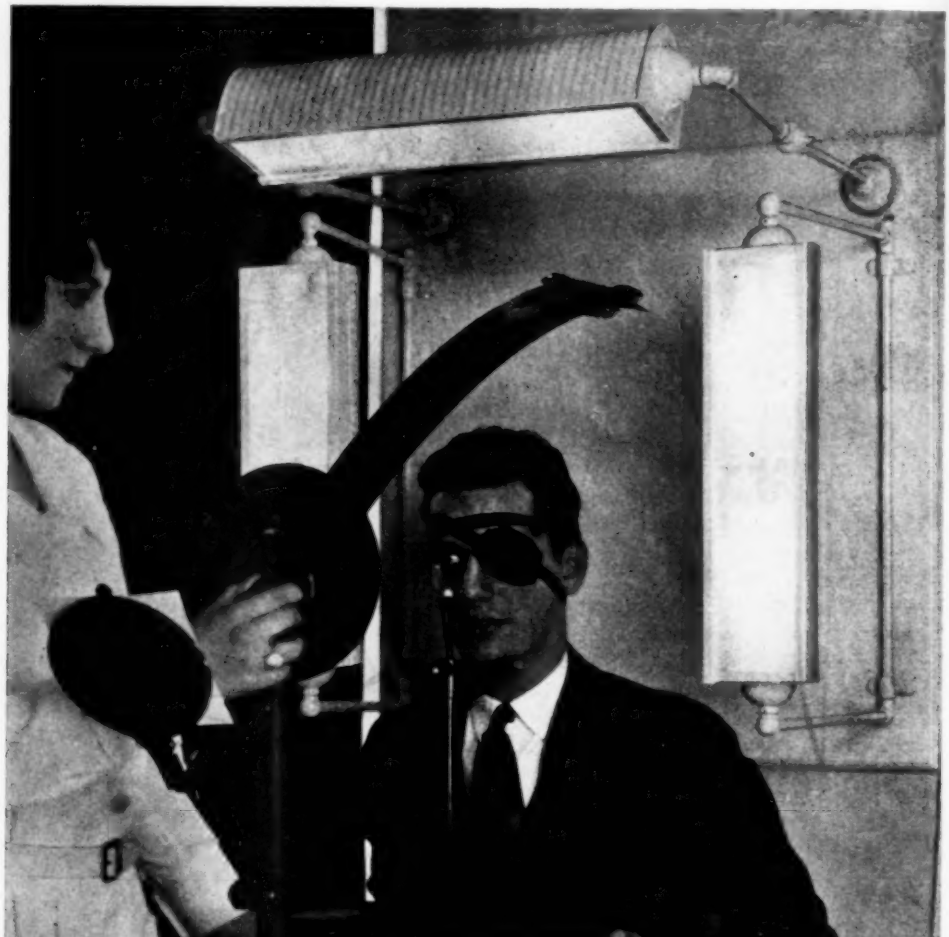
* Presented before the Section on Ophthalmology, College of Physicians of Philadelphia, April 19, 1928.

The writer desires to express his appreciation to Wall and Ochs for their assistance in the development of this equipment, and to the lighting service department of the Philadelphia Electric Company for aid in determining the adjustment of the source of illumination.

meter is placed in the center of the reflector space, nineteen inches from the wall, and is adjusted at the level which gives the best illumination, i.e. 31½ inches. This is permanent. The patient is seated just clear of the wall and slightly to right or left of the center to accord with the eye under observation, with the stool adjusted to the desired height. The shades are drawn, excluding all external light, and the lights turned on by a single switch control, each lateral bracket being so adjusted that the arm of the perimeter as it is carried through the lateral arc just clears the front of the lamp, while by turning the lamp the beam of light is directed across to strike the center of the arm while in this lateral position, but on the opposite side, and the beam from the top lamp is directed to strike the center of the perimeter at the point of fixation. With these adjustments made, the degree of illumination measured with a General Electric Company's foot-candle meter gave the following readings: 30 at point of fixation and with the instrument held at 90° on the arm; 28 at 180°; 25 at 150°; 25 at 120°; 23 at 90°; 23 at 60°; 24 at 30°; 28 at 0°.



The Deichler "triple light" as a practical method of perimetric illumination.

The illustration is intended to give

a better understanding of the appearance of the "triple light" in actual use. As previously stated, either lateral reflector may be pushed to one side while seating the patient.

Central Medical building.

PERSISTENT HYALOID ARTERY

D. Basu, M.B.
CALCUTTA, INDIA

B. K. S., a young student of eighteen years, came from a town in the interior of Bengal, complaining of headaches, occasional inversion of letters while reading, and a floating sinuous image in front of the left eye. A local medical man had suspected the case to be one of cataract. Direct ophthalmoscopy disclosed in the left eye a gray filament as thick as the largest retinal vein, arising from the lower nasal branch of the central retinal artery near the disc, and passing forward through the transparent vitreous to the posterior pole of the lens, where it was attached downward and to the nasal side, sending off a few branches over the lens capsule.

Near the origin of the obliterated hyaloid artery posteriorly, it was somewhat translucent, and it gradually became thicker and deeper in color as it passed forward. At the anterior point of attachment there was a lens opacity and the capsule was somewhat retracted into the vitreous. At the posterior end the artery showed a pulsation synchronous with the radial pulse. The intermediate floating loop measured approximately one and a half times the anteroposterior diameter of the vitreous. It moved freely with every movement of the globe.

The condition of the eye was otherwise normal, and this eye obtained vision of 6/9 with plus 0.5 cylinder axis 180 degrees. The right eye had uncorrected vision of 6/6.

The case was kindly referred by Mr. B. Basu, optometrist, who had made a correct diagnosis and sent the case for corroboration and publication in the medical press.

205 Cornwallis street.

SOCIETY PROCEEDINGS

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

April 17, 1928

Dr. W. Holbrook Lowell presiding

Ophthalmic lesions from vitamin deficiencies

Dr. Howe gave an illustrated talk on the effect of vitamin A and C deficiencies on the eyes of experimental animals. He described the histopathological changes which followed these deficiencies, and mentioned foods which contained the vitamins and foods which were deficient in them.

Beaten silver appearance of cornea

Dr. George S. Derby said this was a condition that was described in all slit-lamp books. It was first described in 1921 as beaten copper appearance of the cornea. The patient was a woman of about forty-five years who had come in because her eyes were troubling her. Vision was 20/20 in each eye. With the ophthalmoscope the fundus was not seen very distinctly. At first the lesion seemed to be in the vitreous, then with twenty lens in the ophthalmoscope it looked more anterior. This lesion was of slow development and continued for years, but never cleared up entirely.

Eye conditions in leukemia

Dr. Benjamin Sachs read a paper reporting four cases of eye complications in leukemia and reviewing the literature of the past twenty-five years. Case one was in a woman of sixty-six years who had a malignant lymphoma

in 1925. The general physical examination was otherwise negative except for pronounced constipation. Both eyes showed marked uveitis, and vision was reduced to shadows. No improvement was obtained with the usual local treatments, but when the Hodgkin's disease improved after the use of X-ray there was also an improvement in her eyes. The patient was subsequently operated upon for cataracts, and her vision now was 6/15 in the right eye and 6/30 in the left.

Case two: A woman forty-eight years old had a lymphatic leukemia. She developed uveitis and secondary glaucoma. Physical examination except as to leukemia was negative.

In case three there was a myelogenous leukemia with a very severe uveitis in one eye. The eye quieted down after receiving X-ray treatment for the leukemia.

Case four: A woman twenty-eight years old had Hodgkin's disease with a recurrent unexplained keratitis which would tend to quiet down whenever the general condition improved.

In summarizing the paper Dr. Sachs said that these four cases were all collected in one locality and that, although no definite proof of the relation between leukemia and the eye involvements could be given, no other known etiologic factor could be found and there seemed to be an improvement in the eyes coincident with the general improvement of the leukemia following X-ray treatment.

Discussion. Dr. Verhoeff said he had had a similar, very interesting case. If she hadn't had leukemia he would have taken her to the hospital and given her diphtheria antitoxin. He kept the pupil dilated at first, but then the tension went up so he almost operated upon her. Then under pilocarpin the tension went down and she got entirely well. This showed what some cases of uveitis would do if you did not do very much.

Dr. Derby related the case of a man with leukemia who had come to the office with a chalazion and had insisted on being operated on. After the chalazion had been cleaned out and more or less pressure put on it, the patient went back to the Huntington Hospital, where the most persistent hemorrhage developed. This was finally controlled with difficulty. This patient had been kept alive by modern methods of treating leukemia. At the time of writing, he was living and was doing his work.

S. Judd Beach,
Secretary.

BROOKLYN OPHTHALMOLOGICAL SOCIETY

April 19, 1928

Dr. Robert M. Rogers presiding

Detachment of retina following intraocular foreign body extraction

Dr. Robert M. Rogers reported on a patient who had presented himself because of the fact that the iris of the right eye was green and the pupil larger than that of the other eye. Six months previously, while chipping plaster with a hammer and chisel, something had struck the right eye. Examination showed the pupil to be wide, the iris light green in color, vision 15/30 corrected to 15/15. The lower temporal quadrant of the fundus showed a small area of retinal degeneration containing a tiny black spot. The left eye was normal. A foreign body estimated to measure one by two mm. was localized with the x-ray, 12.5 mm. behind the corneal center, 7.5 mm. below the horizontal plane, and 8 mm. temporal from the vertical plane. At the hospital a small incision was made seven mm. from the limbus, midway between the external and inferior recti muscles. The sclera was punctured, and by means of an electric hand magnet the particle was withdrawn. The patient was discharged from the hospital on the fifth day, and on the ninth his vision suddenly failed, examination showing detachment of the retina temporally and below. Under mixed treatment internally and subconjunctival injections of dionin and salt, he had regained 20/30 vision.

Rupture of sclera with iris prolapse

DR. ROGERS also reported on a patient aged twenty-five years who had cut his left eye on January 18, 1928. Vision was 15/200, with fairly clear media. There was a laceration of the sclera beginning one mm. from the corneal edge, extending directly out for ten mm., then down for two mm., then toward the cornea for two mm. Vitreous presented in the wound. The wound was irrigated with sterile boric acid solution and one per cent atropin was instilled. The following morning, under local anesthesia, the edges of the conjunctiva were brought together over the laceration and held by three silk sutures. At the end of five days, these pulled out and the wound opened again. Under general anesthesia the conjunctiva was then undermined for about ten mm. above and below the scleral wound, and the raw surfaces brought into contact and held with six silk sutures. Healing was uneventful, and the patient left the hospital eleven days after the operation with corrected vision of 20/50.

Fistula of conjunctival flap following an Elliot operation.

DR. ROGERS further reported on a patient that had been operated on in December, 1922, and presented himself January, 1928, with the history that the day previously he had been accidentally struck in the right eye. The anterior chamber was absent, the eye was soft, vision was 20/70. The flap over the trephine opening was flat and showed a two mm. fistula. The patient was put to bed, with the eye under a pressure bandage which did not improve his condition. At the end of five days, under local anesthesia, a flap was dissected up, and, after the fistula had been touched with the actual cautery, a previously prepared flap was slid over the fistula and held in place by two silk sutures. At the end of twenty-four hours the anterior chamber was restored and conjunctival bleb formed. The patient was discharged at the end of five days with corrected vision of 20/40.

Heterochromia iridis

DR. RALPH I. LLOYD showed a picture and discussed this subject. The earliest report in modern literature was in 1869, when Hutchinson had stated that a cataract operation performed upon an eye which had a lighter colored iris did not promise good results because of complications. Since then numerous reports had been found in the literature. With the advent of the slit-lamp, the characteristic nodules of tuberculosis were very often seen, proving that the condition was, in all probability, tuberculous.

Ocular lesions in a new clinical entity (eruptive fever with stomatitis and ophthalmia)

DR. JOHN BAILEY reported two cases of a new condition which had been described for the first time by Dr. A. M. Stevens in December, 1922, under the caption "A new eruptive fever with stomatitis and ophthalmia." It was characterized by (1) sudden onset with fever, chills, headache, and loss of appetite; (2) the conjunctivæ and corneæ of both eyes being gravely affected, with impairment of vision; (3) pseudomembranous inflammation of the buccal cavity; (4) a generalized skin eruption; (5) a prolonged course; (6) normal white blood count or leucopenia. In the cases reported recovery had occurred but the vision remained grievously affected.

Case: H.D., thirty-eight years, white, male. The trouble began with coryza, sore throat, and temperature of 104°; this was followed by pain in the limbs and was diagnosed as grip. Anti-streptococcic serum was administered. Later there was a purulent discharge from the conjunctiva. The patient entered the hospital on the fifth day. The skin eruption varied in character, there being macules, papules and petechiæ measuring from one to several millimeters, spread all over. Photophobia was present, and there was discharge from the conjunctival sac, with small areas of necrosis. The mouth showed ulcers and hemorrhagic spots. The cervical lymph glands were tender and

enlarged. Smears and cultures from the mouth and eyes were negative, as was also the blood culture. Corneal ulcer developed in the left eye, with secondary iritis. At the end of three weeks the symptoms began to abate. The patient remained in the hospital six weeks, and left with vision of right eye 20/100, not improved with glasses; of left eye 3/100—eccentric.

A second patient, a male child aged nine years, had a similar onset. He was admitted to the hospital on the sixth day and remained there several weeks. Impairment of vision was so marked that he later had to be admitted to a home for the blind.

The nearest approach to this condition clinically was a septic sore associated with skin eruption but here the ocular symptoms were absent. It was probably due to a noninfectious agent which had a predilection for tissues arising from the outer embryonic cell layer.

Wm. N. C. Steinbugler,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY

February 18, 1928

Dr. F. L. Beck presiding

Orbital tumor

Dr. E. F. Conant showed the patient whose case is reported by him and by Dr. Allen on page 794 of this issue.

Discussion. Dr. Kenneth Allen (by invitation) discussed the differential diagnosis with special reference to the effects of x-ray and radium therapy, where such therapy was indicated. He considered eighteen possible orbital tumors in a thorough and comprehensive manner. (See paper on page 794 of this issue.)

Dr. Edward Jackson complimented Dr. Allen on his discussion and emphasized several outstanding symptoms in the case presented. First, failure of vision was noticed by the patient at the time of beginning of swelling of the disc. Second, a distinct glaucoma cupping was to be seen. The point of the time of loss of vision was important as regards tumors of the orbit. Particularly was this true in children, where a blind eye was often complained of before any sign of tumor was demonstrable. The pain was most severe in this case at the time of swelling of the orbital tissues. Although the x-ray had wrought a remarkable cure, temporary or permanent, still the exact character of the tumor remained obscure.

Dr. William C. Finnoff said that the most common tumors of the orbit were endothelioma of the optic nerve sheath and glioma; also that metastatic carcinomas of the orbit were not uncommon.

Dr. William H. Crisp said that the nomenclature and classification of tumors of the orbit more or less intimately connected with the optic nerve were extremely variable and unsatisfactory. It could almost be said that no two authors agreed as to the character of these tumors. The probability was that to a large extent these tumors had a common basis, although one tumor would emphasize certain details of structure, while in another tumor other peculiarities were especially marked. For example, one tumor might have a special tendency to cystic degeneration, while another presented the endothelial type of cell in great abundance. Perhaps all were derived from embryonic rests connected with the early development of the optic nerve. The whole subject had been very carefully worked out some years earlier by Hudson, in a paper published in the Transactions of the Ophthalmological Society of the United Kingdom.

Dr. Allen pointed out that this case was undoubtedly not an endothelioma of the optic nerve sheath, because that type of tumor, although responsive to x-ray, did not regress so quickly as the present one did. In regard to metastatic carcinoma, he believed the primary focus would have been established within three and a half years time, which was apparently the known duration of this tumor.

Tabo-paresis

DR. DAVID STRICKLER reported the case of Mr. B.B.N., florist, aged forty-five years, first seen in February, 1919, with diplopia of three or four days standing due to paresis of the left external rectus. The history was negative. Blood Wassermann was negative. The muscle paralysis disappeared in a few days, leaving an esophoria of three centrads at twenty feet. The patient was not seen again until February, 1925, at which time he reported that in July, 1923, he had been found to have a blood Wassermann of three plus for which he was given a course of specific treatment; that in July, 1924, he had had Wassermann one plus both with blood and spinal fluid.

In February, 1925, vision was reduced to O.D. 20/200 not improved by a glass; O.S. 20/50. Both optic discs were atrophic. The fields were greatly contracted, the right more markedly than the left.

In February, 1925, the case was referred to a neurologist, who made a diagnosis of tabo-paresis which he summarized as follows: Definite bilateral optic atrophy, left sided ptosis, pupils fixed to light but reacting to accommodation. Patellar reflexes absent; lightning pains; paresthesia; typical tabetic ataxia; some weakness of sexual function. No bladder symptoms present.

The patient was given, at weekly intervals, injections of neosalvarsan 0.9 gram intravenously with spinal drainage. These injections were given during a period of ten weeks, followed by a rest period of one month. During the rest period, doses of iodides and daily mercury inunctions were pushed to the point of salivation. Serology at the onset of treatment was: blood negative; spinal fluid four plus in both antigens and the paretic gold curve 3555430000. He continued to receive treatment until April 15, 1926, when treatment was discontinued following a severe reaction to intravenous injection.

On April 15, 1926, the spinal fluid showed no cells; globulin negative; sugar normal; gold curve 0001121000.

On January 18, 1928, the visual fields showed improvement, the left especially so, although there continued to be a definite pallor of each disc. The reflexes and pupillary reactions were unchanged. There were no sensory disturbances on examination. The mental condition was definitely improved, memory and general intellectual resources being considered normal, indicating that the patient had shown marked improvement in the paretic symptoms noted at the first examination. O.D. vision 20/140, O.S. 20/50-1. He was now able to drive his car and to attend to his business generally.

The case, Dr. Strickler remarked, gave some encouragement in the treatment of a condition heretofore considered essentially hopeless.

Steel in vitreous

DR. WILLIAM H. CRISP reported, because of some features of special interest, a case of extraction of a steel splinter from the posterior vitreous. The fragment, an extremely thin flake of metal, weighed only 0.532 milligram (about 1/120 grain). It had entered the eye through the cornea almost at the nasal limbus, and had passed through the iris almost at its root. Lens involvement was limited to a delicate linear opacity in the posterior cortex, and yet after three weeks of retention of the foreign body in the lower part of the vitreous behind the equator, the vitreous was densely opaque and the eye inflamed and decidedly uncomfortable. A previous x-ray examination had led to the conclusion that there was no foreign body in the eye, but examination by Dr. F. B. Stephenson, by the Sweet method, clearly indicated the presence of the fragment. Through a scleral incision between the internal and inferior recti, several attempts at extraction with the hand magnet proved unsuccessful; and, by the courtesy of Dr. John M. Foster, recourse was had to the giant magnet, with which again rather prolonged manipulation was necessary before the fragment was finally obtained. The

eye had quieted rapidly, and the vitreous had become almost entirely clear, but the visual record was still very poor. It seemed likely that in the course of the three weeks delay sufficient exudate had formed in the vitreous to interfere seriously with the attractive power of the magnet.

Episcleritis yielding to x-ray

Dr. William H. Crisp reported a case of episcleritis over the insertion of the internal rectus muscle, which, after remaining practically stationary for five or six days under instillations of homatropine solution, one in sixty, every hour or two, had shown rapid improvement in the course of twenty-four hours after an x-ray treatment, about one-fourth of an erythema dose (kv. 70, ma. 5, distance 8 inches, no filter, time 30 seconds). Dr. Crisp had seen relief from pain, and accelerated healing, in several sluggish ocular disturbances (chiefly corneal) and suggested that, conservatively employed, this remedy was capable of rendering more frequent service in connection with the eye than was commonly appreciated.

Donald H. O'Rourke,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY

March 17, 1928

Dr. E. E. McKeown presiding

Basal cell carcinoma of lower lid

Dr. William H. Crisp presented a man aged forty years who had come on account of a lump on the skin of the lower left eyelid. The beginning of the growth had been noticed four years previously, and two and a half years previously a general physician had opened the lump, apparently under the impression that it was a chalazion. Since that time, according to the patient, the center of the mass had never healed, but had always been more or less covered by a crust which came off from time to time. There had never been any pain, and no further treatment had been received.

Toward the outer end of the lower lid, about in the usual position of a typical chalazion, was a growth measuring thirteen millimeters in diameter parallel with the lid margin by eight millimeters at right angles to the lid margin, and elevated two millimeters above the surrounding surface. Its general shape resembled that of a doughnut or lifebuoy, the thick ring being pale but crossed by a few blood vessels, and the depressed center (3.5 by 3 millimeters) carrying a thin crust, upon removal of which there was seen a granulating center with a central pit almost as deep as the thickness of the growth. After the removal of the crust the underlying surface carried a serous discharge. The periphery was very firm. There was very slight redness and thickening of the lid margin opposite the center of the growth. The conjunctival surface of the lids showed no such elevation as would be seen with a typical chalazion.

(Subsequently to the meeting, excision of a small wedge of the tumor for biopsy was immediately followed by exposure to twenty milligram hours of radium, with lead protection for the eyeball and adjacent tissues. Microscopic study of the excised tissue showed a basal cell carcinoma, with almost no mitoses. September, 1928: After steady involution lasting two months or more, no relapse has occurred.)

Subcapsular cataracts in a diabetic

Dr. John A. McCaw presented a man aged twenty-nine years, with diabetic cataracts. This patient was first seen in March, 1925, when he came for refraction. The vision at that time was 20/16 in each eye. He was tested under homatropine and accepted +2.00 sphere for each eye, which gave 20/16 vision. In July, 1926, he entered Mercy Hospital. On the third day following he went into diabetic coma, from which he recovered by the use of insulin, as much as 150 units being given daily.

About three months after he entered the hospital he was examined because

of failing vision. This was equal in each eye. Examination showed well marked opacities in both lenses. Three weeks later he read the newspaper in the evening and the next morning was unable to do so. Only one month elapsed from the time he first noticed failing vision until he was practically blind. For more than a year his vision has remained the same.

Wassermann was negative; sugar in urine varied from one to two per cent, but he was never free from it. Blood sugar at present time was around 300 mg. per 100 c. c. Examination showed subcapsular opacities in both lenses. The case was presented for discussion as to the best surgical procedure to employ.

Discussion. Dr. William H. Crisp thought the prognosis not good, but suggested a cautious needling; if any symptoms of glaucoma should develop he would make a small incision and extract the soft lens matter.

Marked anisometropia with binocular vision

Dr. G. F. Libby reported the case of a man thirty-six years old, with eleven diopters of compound myopic astigmatism in the right eye and five diopters of the same in the left, when first seen by him in 1921. With minus eight spherical lens, which the patient was wearing for the right eye, the vision was 5/30. By adding three diopters of myopic and astigmatic correction, the vision of the right became 5/6 partly, and with the proper correction for the left eye the vision was also 5/6 partly. In spite of the rather extreme anisometropia the patient developed binocular vision and orthophoria in one month. With his lenses he had six diopters of accommodation in each eye.

On reexamination in 1928, the myopia was found to have increased one diopter in each eye; and eight degrees of esophoria and one degree of left hyperphoria had developed. By adding one diopter spherical to the lenses, vision rose to 5/5 mostly with the right eye, 5/5 partly with the left, and 5/4 partly with both eyes together. Again the accommodation was six diopters in each eye, and very comfortable binocular vision for distance and near was obtained.

Donald H. O'Rourke,
Secretary.

SAINT LOUIS OPHTHALMOLOGICAL SOCIETY

March 23, 1928

Dr. Wm. F. Hardy presiding

Ocular complications of progressive fat dystrophy

Dr. J. W. Charles presented a case of practically complete dystrophy of the adipose tissue of the body in a woman about forty-six years old. The loss of orbital fat was so complete that the eyeballs had retracted to the point of losing contact with the lids. The resultant desiccation of the cornea had given rise to extensive exposure keratitis. An attempt had been made to bring the eyeball forward by plastic operation on the eyelid. The results were rather disappointing, as the keratitis remained, rendering the patient almost blind in one eye.

Discussion. Dr. John Green recalled a similar case he had seen, after enophthalmos resulted from a crushing injury to the malar bone and superior maxilla. The functions of the eye were unaffected, but the patient was conscious of the deformity and the consulting surgeon, against Dr. Green's advice, injected paraffin behind the globe. The eye came forward, but in a few weeks a mass of paraffin had migrated forward into the upper lid, causing complete ptosis. Dr. Green believed that in such cases it was unwise to imperil the function of the eyelid or of the eye itself for cosmetic purposes.

Dr. Charles, in closing, stated that the effort in his case had been toward preserving the eye by enabling the patient to keep the eye clean.

Velonoskiascopy

Dr. Joseph Keller described the method of making this test, and gave his conclusions from a study of fifty

cases. The average clinic patient did not have sufficient intelligence for the test to be very accurate. Those who were suitable for testing usually showed a slightly greater amount of astigmatism than was found by skiascopy. In several cases in which the test was made both with and without homatropine the results were the same whether the drug was used or not.

Discussion. Dr. Leo L. Mayer said that Lindner had also devised small discs with strips to show the patient what he saw in making the velonoskiascopic test. He stated that Lindner's results were interesting, but in case the subjective test differed from the velonoskiascopic the prescription was given according to the subjective result.

Dr. Keller, closing, stated that Trantas had also used the discs in his experiments but Lindner had found the white strips more suitable. Lindner considered velonoskiascopy an excellent method for checking his skiascopic findings, but he found the technique too tedious for routine refraction work.

McMillan Hospital and Research Institute.

Dr. Harvey J. Howard, guest of the Society, after expressing his sincere appreciation of the welcome that he had received from Saint Louis ophthalmologists, told of some of his medical experiences in China, where he had spent twelve out of the last seventeen years engaged in teaching and practicing ophthalmology. The first five years of this time he had been associated with the Pennsylvania Medical School in Canton, China. During the years from 1916 to 1927, he had been associated with the Rockefeller Foundation as head of the Department of Ophthalmology in the Rockefeller school in Peking, called the Peking Union Medical College.

He was shortly to begin with the architects on the plans for the new McMillan Hospital and Research Institute in ophthalmology. The present plan was to erect a hospital of sixty beds for eye patients, twenty of these beds to be set aside for private and semiprivate cases. It was to be the policy of the institution to permit all recognized ophthalmologists in Saint Louis and its vicinity to send private patients into the McMillan Hospital, and it was Dr. Howard's hope that in return for the privileges that the institution would offer in an increasing manner, the men who had such privileges would be glad and anxious to contribute in some way to the advancement of the new institution. Such assistance could be rendered either by working in the clinic, by teaching, or by working in the research laboratories.

One of the primary objects of the proposed institution was to carry on research in ophthalmology. There would be laboratories in physiologic optics, ophthalmic pathology, and ophthalmic bacteriology. In addition to investigation along the lines indicated by the laboratories referred to, the departmental staff would collaborate with other departments in the School of Medicine and Washington University, such as biochemistry, physiology, anatomy, pathology, bacteriology, physics, and biology. Furthermore, a serious attempt would be made to correlate with ophthalmology the most recent advances in medicine and in the fundamental sciences.

In addition to the clinical staff, a few men would be appointed to full-time teaching and research positions. It was also proposed to have three or four internes or residents attached to the staff.

It would probably be a year and a half before the new building would be ready for occupancy, and very likely a year longer before the department could be properly organized. It would seem, therefore, unwise for the next three years, at least, to attempt any postgraduate teaching. Dr. Howard recognized the fact that Saint Louis had an unusually large number of men eminent in ophthalmology, and if the services of these men were to be available for graduate teaching, he felt that one of the best postgraduate schools in our specialty could be established and

maintained there. Just what type or scope of graduate teaching the institution should undertake was as yet undecided. In any case, it seemed to him best, at least during the early years of the institution, not to duplicate the good work that was being done in graduate ophthalmology in other institutions in the United States, but rather to concentrate on filling in the gaps, as it were, that now existed in graduate teaching in America. In the years to come, it might be possible for Saint Louis to become a clinical center of ophthalmology in a manner more or less similar to that of Vienna. Saint Louis had for many years held an eminent place in ophthalmology through such former members of this Society as Dr. John Green, Sr., and Dr. M. H. Post, Sr., and also through such men as Dr. A. E. Ewing, whom we were so fortunate to have with us still. With the inspiration of these men there was no excuse for not keeping Saint Louis in a position of preeminence in ophthalmology.

MAX JACOBS,
Secretary.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY

March 26, 1928

DR. E. B. HECKEL, president

Retinitis

DR. J. G. LINN presented a fifty-eight year old woman whom he had observed for six months during a retinitis with hemorrhages and exudates. Blood pressure had been 280/120 and there had been albuminuria.

Asteroid hyalitis

DR. J. G. LINN presented S. P., male, aged sixty-eight years, who gave a history of sudden failure of vision with subsequent return in right eye. Ophthalmoscope showed O.D. yellowish white disc, sclerotic vessels, some senile atrophy of retina, and slight capsular opacity of the lens; O.S. atrophy of nerve, vessels markedly atrophic, many asteroid bodies in vitreous, also several stringy masses of material apparently similar to asteroid bodies. Vision was O.D. 20/200, O.S. amblyopic.

Orbital tumor

DR. KREBS described the case of Mrs. C. E., aged fifty-seven years, who had first noticed trouble with her left eye in June, 1927, when she began to see double at times and when the left eye felt as though it had hairs in it. The eye was gradually pushed upward and there was swelling of the lower lid. Neuralgic pains had been present in the left side of the face for years. It was for this reason that all her upper teeth had been extracted several years ago.

About February 1, 1928, she consulted Drs. Eiseman and Mather, who found the following: "Chronic hypertension (210/140) with nephritis (small amount of albumin and a few casts), moderate secondary anemia; negative blood Wassermann test. X-ray of head negative except for some thickening of bone in the lower part of the orbit. Left eye elevated; fluctuation about lower left lid. This was tapped with needle and syringe and four cc. of gelatinous fluid was obtained, which rapidly 'set' on exposure to air. It had an 'apple jelly' appearance and was negative to culture and smear. Diagnosis was cyst of orbit."

Luetic iritis

DR. EDWARD STIEREN presented the case of Miss N., aged twenty years, who appeared December 28, 1927, complaining of blurred vision in the left eye and a sore throat of three weeks' duration. The eye presented a faint pericorneal injection, the pupil was sluggish, the aqueous moderately cloudy, and there was some insensitiveness to light. The fellow eye was negative in all respects.

There was a crater-like, somewhat irregular ulcer in a tonsil stump on the left side. (Two tonsil operations had been performed, eleven and seven years before.) There was marked cervical adenopathy on the same side and mu-

cous patches of the pharynx and tongue. A rash which had existed four days was pretty generally distributed over the entire body, and there were syphilides on the palms of the hands. Scrapings from the mucous patches viewed on a dark field showed numerous spirochetes.

The patient received eight weekly intravenous injections of old salvarsan, 0.4 gms. each, and subsequently received four intramuscular injections of mercury bichloride of one and a half grains each. The lesions responded quickly to the treatment and at present there was no clinical evidence of lues. One per cent atropin sulphate had been used in the left eye three times daily for four days, and at a recent examination the fundi and media of both eyes were negative and clear.

Metastatic suppurative choroiditis with colon bacillus

DR. H. H. TURNER presented the case of Mr. F. T., aged fifty-two years, who, while reading, had had sudden severe pain in the right eye, with immediate and complete loss of vision in this eye. This was followed promptly by a violent chill. On admission to the hospital the patient exhibited a classical picture of suppurative choroiditis, with marked proptosis, and a ring of pus showing in the periphery of the anterior chamber. The patient had an organic heart lesion contraindicating general anesthesia. Under local anesthesia, therefore, a crucial incision was made through the cornea, the day following admission, and the contents of the globe, with a great quantity of pus, expressed. Several cultures were taken and these were reported by the bacteriological laboratory as pure cultures of Bacillus coli communis.

The patient was at this time under the care of Dr. J. P. Griffith for a severe fissure in ano, with prolapsing, bleeding hemorrhoids. The question arose as to the route by which this infection reached the choroid from such a remote point. It could be explained only on the assumption of a bacillary embolus so minute as to pass through the pulmonary circulation.

H. H. TURNER,
Secretary.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY

April 23, 1928

DR. E. B. HECKEL, president

Uveitis

DR. J. G. LINN presented three cases. The first was that of P. P., white, male, aged fifteen years, seen on November 30, 1927, complaining of failure of vision in the left eye. This eye showed some ciliary congestion; deposits on the lens from old iritis; string-like vitreous opacities, and several patches of choroiditis with areas of proliferative retinitis. The right eye showed a cystic body of irregular shape, probably a hyaloid remnant, near the disc and a patch of choroiditis down and out from the disc. Slit-lamp findings were negative in the right eye. The left eye showed deposits on the posterior layer of the cornea and a fluid vitreous with many leucocytes. Wassermann reaction was negative; chronic tonsillitis, adenoid hypertrophy, and ethmoiditis were found and corrected. This rendered the eyes quiet.

S. M., white, male, aged twenty-one years, was first seen January 25, 1926, at which time he gave a history of iritis in the right eye for the past two months. He had had a detachment of the retina of the left eye one year previously, following a blow in the eye. Wassermann was negative. There was a deflected septum and there were enlarged turbinates and an abscess of the left tonsil. A submucous resection, tonsillectomy, and adenectomy, relieved the iritis. Scleral trephining of the left eye for detachment was done, and a large amount of straw colored fluid discharged, with no change in the fundus picture, and the lens became opaque three months later. In March, 1928, there was a recurrence of the iritis in the right eye with nodules on the iris edge, many cells in the aqueous, and some deposits on the posterior

layer of the cornea. The fundus was not markedly congested. He was given 5,000 units of antitoxin on alternate days five times, and salicylates and atrophine, but did not improve until put on iodides and mercury inunctions.

The third case was of H. B., white female, aged nineteen years, who was in the hospital in August, 1927, with Neisserian infection of both eyes, complicated by an ulcer at the limbus of the left eye. The ulcer extended to Descemet's membrane and then stopped, healing with prolapse of iris in the area involved in the ulcer. Increased tension developing, a section was made through the staphylomatous area, cutting the external prolapse. There was a recurrence of the staphylomatous process and increased tension. A section was made again by which most of the internal prolapse was removed. A pressure bandage was applied and a flat scar resulted. One month later uveitis developed in both eyes, as shown not by any pain or injection but by deposits on the posterior layers of the corneas; leucocytes in the aqueous and vitreous, and blurring of vision. No nodules appeared on either iris.

JAY G. LINN,
Secretary.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

April, 1928

Toxic foci in cases for refraction

MR. A. F. MACCALLAN reported clinical observations on a series of one hundred private patients. The series was commenced in August, 1927, and included all private patients examined who could be improved by glasses to the usual standard of normal vision. During the period under survey thirty-nine other patients were examined whose vision could not be improved to the normal on account of obvious pathological changes in the eyes. The ocular changes which have been shown to be associated with conditions of focal sepsis are numerous, but those noted in this series of cases were blepharitis, episcleritis, opacities in the vitreous seen with the slit-lamp, opacities of the lenses as seen by ordinary focal illumination, and changes in the retina in the region of the macula.

After investigation the conditions of sepsis in the body calling for surgical intervention were found to be appendicitis one case, enlarged septic tonsils two cases, suppurating antrum one case. The cases of dental sepsis were more numerous, forty-two patients being referred to their own dentists for treatment at the discretion of the dentist. Of these cases radiographs of the whole mouth were made in thirty-three patients, with the result that the appearances which are characteristic of apical abscesses were found in twenty-two of them. Most of these abscesses were shown to have been actually present by extraction of the diseased tooth, though many other teeth were condemned by the dentist which on extraction were found to have the apices infected. There was also one case of a dental cyst with apical abscesses in which the bone of the mandible was dangerously thin.

The patients were almost entirely drawn from the upper middle class, which made the dental findings much more striking than if they were drawn from a hospital clinic. To find twenty-two cases of apical abscess among one hundred private patients who came to an ophthalmic surgeon for glasses seemed to indicate the need for an increased use of radiography by dentists and increased suspicion of every dead tooth.

A detailed description of each of the one hundred cases was appended to the paper, which will be published in the Transactions of the Ophthalmological Society which appears in the autumn.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

May 22, 1928

DR. WHEELING presiding

The evaluation of partial losses of vision

MR. SCOTT STERLING, a member of the technical staff of the Bausch and Lomb

Optical Company of Rochester, New York, gave a talk on this subject with special reference to interpretation of the report of the American Medical Association's Committee on Compensation for Eye Injuries.

Uveitis, unsatisfactory result of iridectomy

Dr. Josiah S. Davies presented Mrs. D., who had been shown before the society last November. She had had a chronic recurrent iritis. There were deposits on the posterior surface of the cornea, considerable increase of tension and practically an occlusion of the pupil. There was considerable pain and the eye was red. The consensus of opinion among the men present at the November meeting was that the proper thing to do was an iridectomy. This was done shortly after. The patient had a very stormy convalescence and the iridectomy wound filled in with exudate. The eye was still red and, while there was not so much pain, the results of the operation were far from satisfactory. This patient was in the hospital for seven weeks following the iridectomy, and during this time she was under intensive medication; pilocarpine, sodium salicylate, milk injections, and so on. All known foci of infection had been removed. The Wassermann and tuberculin tests were negative.

Recurring iritis and diphtheric otitis media

Dr. W. G. Cameron presented Miss E. J., who had had attacks of iritis for the past six years. The iritis came in the early spring. The rest of the year she was all right. Her teeth had been extracted and tonsils removed two years ago. Wassermann was negative. The iritis attack of last spring persisted one month. The present attack had lasted six weeks. Vision of the right eye was 6/60. The pupil was dilated, and there were no adhesions. White dots were irregularly deposited over the whole of Descemet's membrane. There was a floating spot in the vitreous. The disc edges were not clear. Vision of the left eye was 6/20, the general condition similar to that of the right, except for one small adhesion at the upper nasal quadrant.

There was a small marginal perforation of the left ear drum, with a couple of drops of pus in the canal. Culture and smear showed diphtheria bacilli.

Choked discs relieved by decompression

Dr. W. C. Paul presented Mrs. M., aged thirty-two years, who had been seen in September, 1927, complaining of headache around the eyes. There was swelling of the discs three diopters in each eye. X-ray showed an enlarged sella, with erosion of the posterior clinoid processes. Other tests were negative. A tumor was looked for but none found. There was greatly increased intracranial pressure, and decompression relieved the choking of the discs. Six months later the vision in the right eye was 20/30, but in the left it was zero owing to a complete optic atrophy.

A. E. Hillis,
Secretary.

American Journal of Ophthalmology

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THE ARCHIVES OF OPHTHALMOLOGY

Under this name a monthly ophthalmic journal will be published by the American Medical Association, the first issue to apear in January, 1929. It will be the direct successor of the Archives of Ophthalmology, started by Dr. Herman Knapp, and continued by his son Dr. Arnold Knapp. Dr. Arnold Knapp will be the chairman of its editorial board. The elder Knapp came to New York from Heidelberg in 1868; and next year started his journal, in conjunction with Dr. S. Moos of Heidelberg, as the Archives of Ophthalmology and Otology, of which a German edition was also published. In 1877 this journal became the Archives of Ophthalmology, and the Archives of Otology was published separately. The German edition, continued as the Archiv für Augenheilkunde, was edited by Dr. Knapp and Dr. Hirschberg, and later by Professors Schweigger, Hess, and others, and is now conducted by Professors Wessely and Hertel. The Archives and the German Archiv soon diverged from identity, although they were rather closely associated until the world war. The first volume was published in semiannual parts, later it was issued quarterly, and since 1898 it has appeared bimonthly.

From its beginning the Archives of Ophthalmology has been notable for the high standard of its original communications, and the support given it by famous leaders in ophthalmology. In volume one the American contributors included B. A. Pope of New Orleans, O. M. Pray of Brooklyn, Henry D. Noyes, St. John Roosa and Thomas R. Pooley of New York, E. Williams and Joseph Aub of Cincinnati, Henry W. Williams of Boston, Peter Keyser of Philadelphia, George Reuling of Baltimore, and J. S. Hildreth of Chicago. Among the foreign contributors were R. Liebreich and L. de Wecker of Paris, R. Berlin of Stuttgart, H. Kaiser of Dieberg, H. de Gouvea of Rio de Janeiro, Professor Becker of Heidelberg, H. Pagenstecher of Wiesbaden, and J. Hirschberg of Berlin. A second outstanding feature in the Archives has been its Report of the Progress of Ophthalmology, begun in

its early years and continued to the present time. These reports are not the work of hired translators, but of competent ophthalmologists interested in the practice and teaching of ophthalmology, familiar with its history, and capable of judging what there is in each communication that is new and important.

The publication of the Archives by the American Medical Association will give it a support which should assure it of a wider circulation among American ophthalmologists than it has ever had before. Such a circulation it has always deserved, and it will be of real service to ophthalmology in America, and to the ophthalmologists who thus become the readers of the Archives. From this point of view the readers and editors of the American Journal of Ophthalmology will take a most friendly interest in the plans for the new Archives, and in the way they are worked out during the coming months. These plans will doubtless include the development of some features not given in the Archives before, but which have become familiar to readers of the American Journal of Ophthalmology and other journals. For a journal that maintains a high literary and ethical standard, everything that improves and extends its service to its readers will be a cause for congratulation.

It might be supposed that the appearance of what will be in several respects an important new journal, in the somewhat restricted field of ophthalmic literature, would cause some anxiety to even a friendly rival. It would be unjust to impute to any spirit of rivalry the enterprise entered into by the Archives and the American Medical Association. It would be almost as much of an error to suppose that two such journals can not be maintained in America, without either disadvantageously affecting the other. However much alike they may be, each will have individual characteristics, that will make it worth while for the active, progressive ophthalmologist to read both; and in some ways they can be of mutual assistance. Germany, with its population of sixty millions, supports four ophthalmic journals of high character and scientific interest. It would be strange if America, with its English-speaking population of one hundred millions, its wide intelligence, and its material prosperity, could not maintain two. If the prestige of scientific leadership in ophthalmology is to come to America, its special journals will have a large share in bringing this about. The rank of America in ophthalmology will depend very much on its journals, the support they get, and the use that is made of them.

E. J.

MEDICAL OPHTHALMOLOGY

Recently, both in Europe and America, textbooks have been published devoted to this subject or to its particular applications. They indicate a growing interest in this phase of ophthalmology, while in medical journals the increasing number of papers which deal with the medical aspects of ophthalmological cases add to the large amount of information that is accumulating with regard to it.

There is a time in their studies when most medical students cherish the ambition to become surgeons. Later, some realize that the ranks of would-be surgeons are becoming overcrowded, while others are deflected by interest in particular cases, or by pathologic conditions leading into some other field of activity. A few come to understand that operative skill is a relatively narrow field of accomplishment, and that the influences of general nutrition or incidental infection may nullify otherwise brilliant operative achievements. When the glamour of dramatic success is dispelled, surgery may seem an uninviting, rather narrow department of medicine, demanding chiefly constant watchfulness and devotion to endless detail.

Whether ophthalmology should be considered a department of surgery or a branch of medicine is often to be decided by the special skill, knowledge, and experience of the person who

makes the decision. For the ophthalmologist who is trained in surgery, who looks at his cases from the surgical standpoint, and who desires above all to achieve surgical eminence, ophthalmology is a surgical specialty. But one who has been trained for medicine —one whose broader interest in heredity, development, nutrition, immunity, and power of repair point out the emergencies he must be prepared to meet, and who, beyond the mechanical adjustment of parts, watches the mobilization of vital forces in the struggle of the organism with disease—will think of ophthalmology as one of the most important fields for investigation and mastery in the whole domain of medicine.

In Great Britain, some years ago, an interesting discussion was started as to whether ophthalmic physicians should not be added to the staffs of all the ophthalmic hospitals. Where part of the medical profession is trained for surgery, and another part for internal and general medicine, such a question has practical importance. No great or general changes in the staffs of such hospitals seem to have resulted; but it may be hoped that those who are proud to bear the title ophthalmic surgeon have come to realize that they need in their daily practice a great deal of information and skill that are not classed as surgical. Where physicians and surgeons have passed through the same undergraduate training, the balance of medical as distinct from surgical interest will be inclined by the taste, disposition, and associations of the individual.

At this time there is much to indicate that the ophthalmic effects and evidences of disease are of great importance in recognition of general or internal disease, and its tendencies in each case; and that the frequent advances in physiology, pathology, and therapeutics that come to us largely through the literature of general medicine are very important to the ophthalmic practitioner. Every year are brought out facts in connection with medical cases, discoveries in the ward or laboratory, that should be known to the ophthalmologist.

If the business managers who control medical schools and hospitals can recognize ophthalmology only as a subdivision of medicine or of surgery, it would better be as a branch of medicine than as a surgical specialty.

Every practitioner who desires to give intensive study to one particular part of the field should realize that the connection of one branch of medicine with all the others is vital. The branch separated from the vine never bears fruit. The broad organic relation of every fact in biologic science to all other facts is more generally recognized in medicine than in surgery. Forward looking ophthalmologists may wisely give more attention to the medical phases of their work. *E. J.*

REFRACTION FOR THE GENERAL PRACTITIONER

Among ophthalmologists there is a very strong conviction, to which with somewhat less enthusiasm other physicians assent, that refraction should be done only by those with medical knowledge. Yet the fact remains that by far the largest percentage is done by those without such knowledge. After all, does not much of the responsibility for this state of things lie with the ophthalmologist? Though specialists have increased in number by leaps and bounds, today and for many years to come most medical practice will be general practice, and how well have the medical colleges equipped the general practitioner to undertake refraction? The answer is, "not at all!"

To each rural town—even to those of only a few hundred inhabitants—a so-called optometrist comes each week or month, and the refraction of the community is done by this traveling vendor of merchandise instead of by the local physician. At his medical school the latter probably had a small amount of instruction in external diseases of the eye, but was told that refraction was too complicated to be taught in the few hours allotted to

ophthalmology in the school. He may treat conjunctivitis, iritis, trachoma, or corneal ulcer, but he avoids the testing of eyes for glasses, a subject in which he feels that he has had not even a modicum of training.

It is unquestionably true that specialists can not be made in the medical school, but is it equally true that sufficient training could not be offered in ophthalmology to permit of this branch, like the six or eight other special branches, being practiced and later to a reasonable degree mastered by the typical rural doctor, the "general" practitioner who must either cover many fields fairly well or be a general failure. Can it be that the ophthalmic teacher has erred in failing to encourage the medical student to include refraction in his "general" practice?

Surely there is one very effective way to retain refraction as a branch of the practice of medicine, and that is to give the student who is going into general practice an opportunity to learn to refract, even to urge him to do so, and also to give physicians already in practice every possible chance to learn refraction by offering short courses in this subject in many convenient centers and in all medical schools.

By this it is not intended to advocate that refraction shall be taught completely in the few precious hours allotted to ophthalmology as a part of the curriculum of required studies, for these hours ought to be devoted to considering the relation of the eye in health and disease to the general system, and to the care of ocular emergencies; but it is suggested that the study of refraction shall be included in the elective hours, so that any who intend to do general medical work may be able to make the prescribing of lenses a part of their practice.

Obviously the general physician can not be expected to understand ophthalmology as well as does the specialist in the subject, the "ophthalmic physician," but certainly his medical training should fit the general practitioner to do this much more intelligently than those who have had no such training. Let us urge that, as a physician and a permanent resident in his community, he shall qualify himself to attend to this need, rather than leaving it to itinerant salesmen whose interest is grossly commercial, who are ignorant of the complex physiology and pathology of the human organism, and who not infrequently, in their eagerness to make sales, fit or misfit one pair of lenses after another to a patient whose failing vision is due to systemic disease. *L. T. P.*

SUPERIOR RECTUS AS SUBSTITUTE FOR LEVATOR PALPEBRÆ

Scarlett's interesting report on the use of Shoemaker's modification of the Motais operation (see page 779) may well be read in conjunction with a paper by Kirby on "a modified Motais operation for blepharoptosis" (Archives of Ophthalmology, 1928, volume 57, July, page 327).

Few of the precise and delicate operations about the eye offer such a sense of delicacy and fitness as that proposed by Motais in 1927 for correction of ptosis of the upper lid. One of the difficult features associated with the Motais operation is the fact that practically the entire operation must be done on the conjunctival aspect of the lid.

Shoemaker's modification is based upon the belief that anchorage, rather than physiological substitution of a part of the superior rectus for the levator, is responsible for the result obtained. In this operation, after the superior rectus tendon has once been exposed, the further steps are executed through a skin incision, the slip of rectus muscle being sutured to the tarsus.

In the method developed by Kirby, and employed by himself and by Wheeler and Goldstein in a total number of twelve cases, with satisfactory results in eight, the whole operation is carried on through a skin incision. The new operation is said to be perhaps even more difficult than either the original Motais or the Shoemaker modification, and to require perhaps an even

more accurate knowledge of the surgical anatomy of the parts involved.

A further important difference between the Motais and the later Shoemaker procedure, not mentioned in Kirby's paper, is that in the latter the suture is carried through the superior rectus tendon without dividing any part of the tendon from its original attachment to the eyeball. In the hands of the average operator, it may be that this detail, together with the preliminary exposure of the superior rectus tendon, will render the chance of success appreciably greater than by the Kirby technique. *W. H. C.*

CEREBELLAR AND RETINAL HEMANGIOMA

Several of the most important works on ophthalmoscopy have been written by neurologists. It is quite certain that every neurologist should be a good ophthalmoscopist, and it is almost equally desirable that every ophthalmologist should have a broader acquaintance with neurology than is commonly found among our specialty. The occasional importance of an intimate professional contact between the two branches of medicine is suggested in a case reported by Cushing and Bailey in the Archives of Ophthalmology, September, 1928. Incidentally, it may be said that this case report furnishes an interesting supplement to the careful study by Lloyd in the August issue of the American Journal of Ophthalmology ("Fundus conditions requiring differentiation from intraocular tumor").

The case in question was one in which hemangiomas of analogous character occurred both in the cerebellum and in the retina. A similar coincidence was apparently first observed in 1922, by Lindau, whose name neurologists have since applied to the syndrome. In Lindau's case, the right eye had been enucleated eight years before the death of the patient, who in addition to an angiomatous cyst of the cerebellum had shown at autopsy bilateral adenoma of the suprarenal glands. Cushing and Bailey's patient had been repeatedly examined by at least eight observers, yet the presence of the retinal angioma was not detected until five years after an operation for the cerebellar cyst.

These authors point out that an ophthalmologist who finds one of these lesions in the retina should realize the need of looking for cerebellar symptoms, since a cerebellar tumor favorable for operation may coexist; and, with equal emphasis, that the neurologist who desires to make a pathological diagnosis of a cerebellar lesion before operation should know about retinal angiomas and their ophthalmoscopic appearance. It is also advisable to remember that these angioblastic lesions of the nervous system are frequently associated with cysts of the kidney, pancreas, and suprarenal glands. *W. H. C.*

THE GUILD OF PRESCRIPTION OPTICIANS

Several communications in this Journal have commented favorably upon a new organization entitled the "Guild of Prescription Opticians of America," on the ground that the members of that body were pledged to make spectacle lenses only upon prescription by ophthalmic physicians. A letter published in the "Correspondence" department of this issue (see page 827) calls attention to an apparent weakening of the Guild's attitude, as disclosed in a recent circular letter to its members.

According to this circular letter the Guild seems to be on record as recognizing that some opticians are unable to restrict themselves absolutely to prescription work for ophthalmic physicians, but must do a certain amount of refracting to prevent their customers falling into the hands of optical competitors. The Guild advises that this practice should be discouraged as much as possible, and that in such exceptional cases spherical lenses only should be supplied to customers.

If the Guild has really changed front in the manner indicated by this

circular letter, it is hard to believe that the revised attitude of the Guild is superior to that of many excellent opticians who do not belong to that organization, but whose practice it is to refer to ophthalmic physicians the great majority of their customers, themselves refracting only such individuals as for one reason or another can not be persuaded to follow this advice. Perhaps the Guild has been contaminated by recent controversy as to the relative virtues of "temperance" and "prohibition"! *W. H. C.*

BOOK NOTICES

The treatment of cataracts and some other common ocular affections, by Lieut.-Col. Henry Smith. Indian Medical Service (retired), London; etc. With the collaboration of Lieut.-Col. A. E. J. Lister, F.R.C.S., I.M.S. (Retired), London; Dr. Arnold Knapp, New York; and Dr. J. Russell Smith, London. Octavo, 287 pages, 68 illustrations by Dr. Derrick T. Vail, Cincinnati, and Dr. J. Russell Smith, London. Publishers, Butterworth and Company, London. Price 15s. 6d.

The enormous number of cataracts extracted by this operator must cause all of us to bow in recognition of his superior experience. He had to work out an operation suited to his needs. It was not possible to make postoperative dressings. They had no one to do it. Smith soon found that the extraction of the lens in its capsule made such dressings unnecessary. Subsequent needlings did not have to be done. At first he delivered hard lenses upper edge first and the morgagnian types as tumblers. Since leaving India he has decided it was possible to deliver all lenses as tumblers. He went back to India long enough to perfect this part of the technique. He describes and illustrates how a hard lens should be dealt with to cause it to tumble. The manner of handling the hook, the pressure of the tip and the elbow are all so important that the loss of vitreous can be controlled largely by their dextrous use. Just when to use the spatula and how to use it are of vast importance. The author believes that the use of forceps to lift out the lens and of vacuum cups to suck it out fill up the section space and make the vitreous losses greater than by the Smith method. "In the hands of an expert" is frequently mentioned. There is the rub. Certainly the intracapsular extraction should not be attempted by anyone else. The question is whether a man doing a cataract or so a month should ever attempt it.

Smith has some interesting ideas on other things, the use of atropine for instance. He says atropine is harmful if the pupil is adherent and cannot be dilated; that it is harmful in corneal ulcer if there is no iritis, and perforation is not threatened; that it is an irritant; and that unless combined with cocaine it is washed out by the tears as fast as it is put in!!

His experience in the Punjab, where oral and nasal sepsis are the rule, has taught him that these are unimportant. He thinks it is "far better not to touch a mouthful of septic teeth than to clear them out and operate while the sockets are still discharging".

In incipient cataracts with vision 6/12, he expects a large improvement of vision from subconjunctival injections of cyanide of mercury The hyperemia is maintained by the use of yellow oxide ointment.

Barraquer's operation is dealt with in a chapter by J. Russell Smith.

Routine after-treatment and after-complications are taken up under several headings. Daily dressings and inspection merely satisfy a morbid curiosity. The author advocates postponing the first dressing until the tenth day.

Lens couching and treatment of glaucoma respectively are taken up in separate chapters.

This book of 287 pages affords very interesting reading whether one ever expects to follow its teaching or not.

Melville Black.

Blepharoplasty, and plastic operations on the other soft parts of the face. (Hungarian). Josef Imre, Jr. "Studium," publishers, Budapest. Price $5.00. (Translated from a review sent in German by Dr. Julius Fejer of Budapest.)

Dr. Imre, Jr., Professor of ophthalmology in the Hungarian University in Pecs, Hungary, has published a monograph in the Hungarian language, containing 258 pictures and drawings, and in which the author has collected those plastic experiences and results of work done during the war in operating upon the wounded and maimed, and after the war in connection with the extirpation of various tumors of the lids, of the face, of the external ear, of the bridge of the nose, and of the forehead. In this volume one does not encounter a description of typical methods, but the author describes, draws, and photographs such cases as demand for their operative treatment an appropriate form sense and imaginative faculty.

This collection is therefore not only useful to ophthalmologists but to others who are interested in reconstructive operations.

In the first chapter the author describes general principles; in the second chapter the instrumentarium, and the technique of preparation, of anesthesia, and of after treatment. In the third chapter he expresses his opinions and offers critical observations as to the possibility of applying known methods, and especially he states his views in detail with regard to free transplantation and the known methods of using pedunculated flaps.

The author is no adherent of free transplantation in the face and on the lids, but prefers to apply arched displacement of the flap, combined with Burrow's triangle for covering gross defects of the lids and of the face. In every plate the patient is shown as photographed before and after the operation, and two drawings are added in which the actual method of operation and the application of the sutures are illustrated. The plates are very instructive and extremely clear. Whoever is interested in plastic operations of the eyelids and of the face should study this excellent book, and will find therein many new thoughts and details of technique. The reproductions are very fine and do credit to the graphic industry in Hungary.

It is to be hoped that the monograph will soon appear in the English language, and I most warmly recommend to American colleagues the acquisition and study of this work. They would understand the pictures and drawings even without the explanatory text. *Julius Fejer.*

Sémiologie oculaire. Félix Terrien. 228 pages, 100 illustrations. Paper covers, 40 francs. Masson et Cie, Paris.

As the subtitle of this publication indicates, this is a treatise on ocular statics and dynamics. The subject is clearly presented and the ground well covered. There are seven chapters in from three to eight parts. The first chapter deals with the extraocular muscles, their anatomy, action and innervation. In the second chapter the static and dynamic equilibrium of the eyes are considered. Functional troubles, as latent strabismus and heterophoria, with treatment of this last, occupy the third chapter. The fourth chapter is a long one devoted to orthoptic treatment, in which the author has considerable faith. A few pages are given to operative treatment. The indications for this and the amount of correction to be expected from advancements and tenotomies are concisely stated.

The fifth chapter has to do with paralyses. The general symptoms and clinical forms are first given, and then the various locations of the lesions are considered. Etiology and treatment close the subject. Nystagmus is the title of the next to last chapter, and most of the varieties are discussed with an attempt at classification. The final chapter handles displacements of the globe. Exophthalmos occupies most of

the space, but the last eight pages are devoted to traumatic enophthalmos, with a review of the various hypotheses as to the mechanism of this condition.

The work is so complete that it might serve for a textbook on the subjects considered, though it is very much the expression of the author's opinions. In spite of the clarity of the presentation it will serve better as a book of reference than as a treatise to be read through at one sitting, because there is no development of a thesis but rather a large fund of information on the big subject under consideration.

L. T. P.

The prescribing of spectacles. Archibald Stanley Percival, M.A., M.B., B.C. (Cantab.) Third edition, 239 pages, illustrated with diagrams. New York, William Wood and Company, 1928. Price $5.00.

The plain title of this little work will be misleading to one who expects to find it a simple treatise on the use of the trial case and the fitting of spectacle frames to the face. There are many pages of forbidding looking mathematical formulæ, and the purpose of the author is clearly revealed in his preface to this third edition, in which he writes that every new statement he has made in the body of the book has been proved in the optical section. It adds much to the practical value of the book that this optical section, of about eighty pages, occupies a separate chapter, in which the reader who desires mathematical demonstration may study the optical problems incident to refraction. The author claims to report the final results of the observations of Professors Gullstrand and Tscherning, which have given us new values for the constants of the eye and consequently for the cardinal points of the emmetropic eye. He also gives his reasons for having throughout adopted those of Gullstrand.

The first chapter deals with accommodation and ends with a paragraph stating that the greater part of the chapter is based upon Duane's paper on subnormal accommodation, published in 1925. Duane is given full credit for having improved upon Donders' classic presbyopic curve, and the former's diagram and tables on the amplitude of accommodation according to age are here reprinted.

In the chapter on refraction, the principles are described briefly and clearly. The author states that no test of refraction is reliable without the use of a cycloplegic. In hyperopia it is his custom to correct the manifest and one-third of the latent error. The use of cross cylinders in refraction is barely mentioned. The author devotes ten pages to retinoscopy, in which he uses the concave mirror.

In considering the etiology of myopia, the author upholds the following theory: that the superior oblique muscle is the one chiefly employed in turning downward the partly converged eye, and that with any synergic action of the inferior oblique the eyeball must be compressed by these encircling muscles, and thus tend to increase the length of the ball and the degree of myopia. It will be noted that this agrees closely with the theory of Stilling. In this connection it has been observed that the oblique muscles are so situated that they press on the points of exit of some of the venæ vorticosæ from the eyeball and thus help to promote the venous congestion. Percival, therefore, strongly advocates that work for such patients be raised to the level of the eyes by suitable book rests and so on, and held as far off as convenient.

In this section on periscopic lenses and on bifocals, Percival recommends that the lower segments be rectangular in shape and not wider than 13 mm. nor greater in height than 8.5 mm., leaving a 3 mm. strip of distance glass below the reading segment.

About sixty pages are devoted to a consideration of faulty tendencies and deviations of the ocular muscles, with practical points on the uses of prisms.

The section on frame fitting contains useful advice for all who prescribe spectacles, and particularly for those

who practice in the smaller cities and have to make the facial measurements to be forwarded to the manufacturing opticians.

This is a useful book for students and summarizes for both students and practitioners most of the important factors entering into the problem of refraction. One misses any reference to the subject of ocular dominance, which has developed increasing interest and importance for the physiologist and the oculist. *Jerome B. Thomas.*

Ciliary movement. J. Gray, M. A., Fellow of King's College and lecturer in Experimental Zoology in the University of Cambridge (England). Octavo, 162 pages, numerous illustrations. New York, the Macmillan Company; Cambridge, England, the University Press, 1928.

In spite of its name, this is not a book on ophthalmology, but it will be read with pleasure by ophthalmologists who interest themselves in the basic problems of physiology and life. Written by a modern research physiologist of renown, it has to do with a minute but important structure found in a number of tubular and other regions of the vertebrate body, but more especially in very small animals, playing a very essential part in the life of many invertebrate creatures. In such animals, "where the velocity of movement is very low, cilia and not muscle fibers often play the dominant rôle as organs of contraction and locomotion". Both the scientific facts and the hypotheses in which the book abounds are full of fascination. A number of ingenious experiments, performed to elucidate the hydrodynamical problems involved, are described and illustrated.

A few quotations will perhaps give some idea of the scope of the work. "Ciliary movement may be defined as the work which a cell does by means of permanent but movable structures located at its surface." "Whereas muscular movement can occur either in water or in air, ciliary movement is restricted to water."

The spermatozoon moves by means of flagella (larger structures but similar to cilia), the fish by means of muscles; but "there is probably no great difference in mechanical principle in the modes of progression of a spermatozoon and a fish". Evidence is presented to show that the cilium is an active living unit. That is, the mechanical energy liberated by this tiny organ is not derived from the body of the cell, but is derived from chemical changes taking place in the organ itself. "The rate of flow over quite an active ciliated epithelium approximates at room temperatures to 1.5 meters per hour."

This volume is one of a series on comparative physiology published by the Cambridge University Press. *W. H. C.*

Goiter prevention and thyroid protection. Israel Bram, M.D., author of "Goiter; non-surgical types and treatment"; Medical director, Bram Goiter Institute, Upland, Pennsylvania; etc. etc. Octavo, 327 pages, illustrated. Philadelphia, F. A. Davis Company, 1928. Price $3.50 net.

The author, whose preface remarks that probably the greatest advances in medicine within the past decade have been in the field of the ductless or endocrine glands, intends this volume to be useful and interesting to the non-medical as well as to the medical individual. He indicates that approximately every twentieth person in a city like New York presents a mild, moderate, or large goiter. In the production of Graves's disease, he emphasizes repeatedly the part played by environment and mental attitude. "The high tension mode of existence during the past decade or two, with the multiplicity of automobiles, aircraft, highwaymen, 'jazz' music, 'jazz' thinking and acting, the morbid craving to be entertained, the character of movie and stage presentations, marital incompatibilities and divorces, all these and many more current factors serve to undermine the stability of the nervous

and ductless gland structures of susceptible individuals to the extent of increasing markedly the incidence of this disease." "There need be little disturbance of this vital organ if certain simple rules of physical and mental conduct were observed."

Chapters are devoted to the thyroid gland in health and disease, to definitions and descriptions of goiter of various kinds, to the use of iodin (discretion in which is urgently demanded), and the influence of diet, of sleep, and of states of mind.

In chapter eighteen on "Thinking and the thyroid" much sound philosophy of life is incorporated. "Emotionalism or excitement is overcome by reasoning or self-discipline, resulting in happiness to self and others." "Whether you are seven years old or seventy, you *can* learn new tricks and school yourself in the art and science of repression, self-control, inhibition." "Keep the corners of your mouth turned up, and soon, by contagion from your exterior, your interior will likewise smile."

Throughout, the book is interestingly and vigorously written. For the most part it approaches the layman with clear explanations of medical facts, but it does not pander to a morbid curiosity. The author's views as to the inefficiency of the surgical treatment of exophthalmic goiter will be open to dispute. But in general the work is well balanced, and may with advantage be widely read both among the medical profession and by the public. *W. H. C.*

The phoropter, its use in ocular refraction. Cloth, 213 pages, profusely illustrated. American Optical Company, Southbridge, Massachusetts.

Advertising has become a fine art. The radio offers us a symphony in return for the privilege of announcing the excellence and promoting the sale of some article which all of us should use.

The American Optical Company publishes a book of 213 pages, extensively illustrated, to advertise to refractionists an improved model of a piece of optical apparatus, the De Zeng phoropter. The brochure is well printed, and is useful in that it epitomizes in short chapters some of the important features of refraction, including brief discussions of skiaskopy, dynamic skiametry as practised by Sheard and others, accommodation convergence and fusion convergence tests, and cross cylinder tests and their significance. Each chapter ends with a considerable list of references bearing the names of many writers who have made important contributions to the development of physiological optics. The last chapter is especially convenient for reference as a collection of tables of scientific data frequently used in refraction, including one that gives the difference between the equivalent, effective, and neutralizing powers of varying types of convex and meniscus lenses.

Jerome B. Thomas.

Official guide book of medical postgraduate work in Hungary. Issued by the Hungarian Medical Postgraduate Committee. Second edition published June 1, 1928. Printing office of the Athenæum, Budapest. 122 pages, illustrated.

This is an excellent description, in English, of the abundant clinical facilities of Budapest, a city long famous as one of the most beautiful European capitals, and which is rapidly attracting more attention from physicians who travel in search of clinical experience and instruction. Supplemental information is given with regard to several other important cities of Hungary (Szeged, Debrecen, and Pécs), as well with regard to some miscellaneous details of interest to the traveller.

The introduction states that all the professors and chief physicians in the Budapest clinics and teaching institutions speak either English, German, or French. The address of the Hungarian Medical Postgraduate Committee is VIII, Maria-utca 39, Budapest, Hungary. *W. H. C.*

CORRESPONDENCE

The Guild of Prescription Opticians

To the editor:

A number of references to the Guild of Prescription Opticians appearing in the American Journal of Ophthalmology have been in commendation of said organization. In an editorial in volume 11, no. 2, page 150, it is stated that the Guild "has gone on record as pledged to refuse to test eyes and is undertaking to refer persons desiring eye examinations to an eye physician. If this idea is correct this Guild deserves the support of the medical profession. In Buffalo a group of physicians met with the leading opticians of that city and declared their intention to send prescriptions only to those who agreed to dispense solely."

Judging from such articles and after reading the code of ethics of the Guild I believe that the writers were under the same impression I was, that no member was supposed to refract and that he might even be pledged not to. Their application for membership reads: "We hereby make application for membership in the Guild of Prescription Opticians of America, Inc. We are dispensing opticians and do not examine eyes for glasses. If admitted to membership, we agree to abide by the constitution and by-laws of the Guild and such amendments as shall be enacted from time to time hereafter."

I have in my possession a letter in the following terms: "In the application for membership you have read the words 'I do not examine eyes for glasses'. The Board of Directors do not put a strictly literal interpretation upon this clause, because they know there are men, situated throughout the United States, who for some legitimate reason or other are of necessity compelled to test eyes. In such cases, where it is not possible to get your customers to consult an oculist, and would get into the hands of others, we must overlook these words 'I do not examine eyes for glasses'. But in so doing, we ask that spherical lenses only be supplied and the practice be discouraged as much as possible." This is written on a letter head under "Guild of Prescription Opticians of America, Inc.," and is signed Harry S. Shimwell.

If the Guild wishes to admit to membership those who are compelled to test eyes it would seem that this should be clearly stated in some way, so that we should not be under any misconception. It would seem that "Do not examine eyes for glasses" means but one thing.

W. O. La Motte.

Wilmington, Delaware

The stereoscope in ophthalmology

To the editor:

In your review (August) of the fourth edition of my book, "The Stereoscope in Ophthalmology", there is an error in the second paragraph, evidently typographical, viz:

> "The greater part of the present essay is devoted to hyperphoria."*
> This should read exophoria.

In speaking of the illustrative case, you are "puzzled by the giving of a minus sphere which had not been indicated under cycloplegia, and also by the giving of unequal cylinders although astigmatism of equal amount had been found for both eyes under cycloplegia."

The figures as given are:

	under atropine	
R.	—.25+1.12c.	90°, V.=1.
L.	+.50+1.12c.	80°, V.=1.

and the postcycloplegic prescription was:

R.	—.25+1.00c.	90°, V.=1.
L.	+ .87c.	85°, V.=1.

The patient was twenty-eight years old and had exophoria of 10^{Δ} at the distance.

In my paper on "Cycloplegics in Refraction" (A. M. A. 1927) is the statement:

> "Just how much one should allow for the normal tone of the

* NOTE BY EDITOR: In transcription the word "hyperphoria" crept into the manuscript of the review in place of "heterophoria," and the error was overlooked.

> ciliary must be a flexible rule. . . . . I do not hesitate to vary the amount and axis of astigmia. The knowledge of the static refraction enables one to know that his modification is within logical limits."

You say, in closing: "It is to be feared that a very large percentage of all elaborate procedures for muscle training are substitutes, often ineffectual, for accurate refraction."

On page 33 of my book is the statement:

> "Errors of refraction and heterophoria are so often coexistent that it is difficult to assign to each factor its distinctive symptoms. Not until the refraction has been determined under a cycloplegic can one be certain, in any given case, that symptoms quite characteristic of heterophoria are not produced by the refractive error. Clinical experience in relieving a certain train of symptoms, which have persisted after the correction of the refraction, by treating the heterophoria, is the basis for the opinion here expressed."

With this illustrative case it is cheerfully admitted that the more complete correction of the refractive error was undoubtedly a factor in the relief of the asthenopia. It would have been a better proof of the value of curing the heterophoria had the patient first failed to get relief from the glasses alone. It is to be regretted that such a case was not selected. If a fifth edition of my book is required, this defect in logic will be corrected.

In this case, the presence of 10^{Δ} of exophoria at the distance, and adduction and abduction of 16^{Δ} each, contraindicated sending the patient to her home—five hundred miles distant—to make the trial, as with such a muscular imbalance comfortable continued near fixation would be impossible.

David W. Wells.

Boston

Principles of magnetic attraction

To the editor:

From the abstract (p. 723) of Lancaster's presentation to the New England Ophthalmological Society one may get impressions about the effectiveness of the giant magnet which may not have been intended, and are surely not so easy to substantiate.

As a rule, the size of the foreign body (assuming that it is magnetizable) is more important than the size of the magnet. If this foreign body can be saturated (like a bottle it will have a definite capacity) by a small magnet, nothing can be added by a large magnet. Then the law of attraction (or "pull") has to be considered. With the knowledge that under favorable conditions this "pull" is in inverse proportion to the square of the distance, one has to figure, for instance, on one-fourth the power at four mm. that will be had at two mm.; and to make due allowance.

On the whole, and for the above reasons, the extraction from the eye of a fragment measuring less than three mm. in its greatest dimension depends not so much upon a large magnet as upon location, resistance of tissues, and near approach of the magnet tip.

An interesting demonstration of this truth can be had by melting gelatin to the consistency of vitreous, placing an inch thick layer in a cardboard box, sprinkling iron chippings of small size on the surface, and placing the box on the magnet tip.

This is "old stuff" that hasn't had too much publicity—for the comfort of the man with his first case.

H. B. Young.

Burlington, Iowa

ABSTRACT DEPARTMENT

Abstracts will be classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases, including parasites
18. Hygiene, sociology, education and history

1. GENERAL METHODS OF DIAGNOSIS

Jasinski, M. **Refractometric investigations of the aqueous humor in ocular disease and in normal eyes.** Klin. Oczna, 1928, April, pp. 19-32.

The author used Abbé's refractometer to determine the refractive index of the aqueous humor in a series of normal and diseased eyes. He found an increased amount of albumen in the anterior chamber of eyes afflicted with congestive glaucoma, in iridocyclitis, in serpiginous ulcer of the cornea, and in other inflammatory conditions of the anterior segment of the eyeball. The greatest increase of albumen has been found in the aqueous humor of a glaucomatous eye after an opticociliary neurotomy. In this case the refractive index of the contents of the anterior chamber was the same as that of the blood serum. In simple and secondary glaucoma, as well as in retinal detachment, the refractive index of the aqueous humor was normal. The subretinal fluid in separation of the retina proved to contain an increased amount of albumen. *M. Beigelman.*

2. THERAPEUTICS AND OPERATIONS

Blanco, Tomas. **Loretinate of bismuth in ophthalmology.** Arch. de Oftal. Hisp.-Amer., 1927, v. 27, Sept., p. 557.

This is a synthetic preparation built up from a quinolin base and later combined with bismuth. It occurs as a yellowish crystalline powder, inodorous and very slightly soluble in water. It is decomposed in contact with certain organic substances, where it combines with sodium to form a new salt that is readily soluble, and quite germicidal in action. The neutral loretinate or triloretinate of bismuth slowly liberates an acid in the presence of water, decomposing to the basic loretinate, which is quite stable. This slow acid formation is probably the feature to which the salt owes its gradual antiseptic action.

The author is enthusiastic as to the therapeutic results following the exhibition of loretinate of bismuth in eczematous (phlyctenular) conjunctivitis, either when existing alone or when combined with trachoma. In corneal ulcerations and pseudomembranous conjunctivitis this is found to be much superior to iodoform. There is no discomfort attending its use. In blepharitis the drug is prescribed in the following ointment, to be used at night after epilation of the infected follicles: loretinate of bismuth 1, lanolin 2, vaseline 3. During the day a wash is used for the lids, consisting of solution of sodium benzoate (strength not stated). Prior to any surgical operation the salt is dusted

into the conjunctival sacs and allowed to act as a sterilizer. A bibliography is attached. *A. G. Wilde.*

Duke-Elder, W. S., **Ultraviolet light in the treatment of ophthalmological diseases.** 2. Local phototherapy. Brit. J. Ophth., 1928, v. 12, July, p. 353.

This is a continuation of the author's contribution in the June issue of the same journal. The statement is made that the action of ultraviolet light is primarily abiotic. With radiation the cells are either injured or destroyed and cast off. Later the damage is repaired. With the lens conditions are different. This is an avascular tissue in which repair is lacking. The autooxidation system and the permeability of the capsule are altered by radiation, and even in very small doses with no apparent effect this predisposes to cataract formation. It is therefore essential that the lens be excluded from the path of the incident rays. It is suggested that either a general light bath or local phototherapy should be administered with care. The beam of light should be properly controlled, limiting it to the diseased area. For this purpose the author uses a modified Gullstrand slit-lamp fitted with a mercury vapor lamp and an optical system of quartz. In the treatment of the fornices a special quartz director is used.

The clinical use of local radiation with ultraviolet light should be limited to the treament of diseases of the cornea, the sclera, the conjunctiva, and the lids. In selected cases of these its effect is often dramatic. Particularly is this so in the case of corneal ulcers of all kinds, ranging in severity from a hypopyon ulcer to the small recurrent marginal ulcers which are often so troublesome. In these cases ultraviolet light therapy undoubtedly seems to be the treatment of choice. The treatment is also decidedly indicated in the cases of sclerokeratitis, and in many chronic affections of the conjunctiva, including the most severe trachoma. In any of these in which the etiology is tuberculous the results of treatment are most satisfactory. Illustrative case histories of chronic conjunctivitis, trachoma, vernal catarrh, and chronic blepharitis accompany the contribution. (Six illustrations.) *D. F. Harbridge.*

Fuchs, A. **The influence of ultraviolet rays in a case of hemeralopia and keratomalacia, and a few remarks concerning beri beri.** Wien. klin. Woch., 1927, v. 40, June 23, p. 809.

One case of xerotic flecks in the conjunctiva is reported, which developed in a worker in the hospital on the usual diet. Without change in diet he was given mercury quartz lamp treatments to the body, with rapid disappearance of the symptoms. A second case of keratomalacia, in a seven months old child, is reported. The child's general condition was very poor and the corneæ were perforated, with iris prolapse. Light treatment and change of food caused rapid recovery. The author suggests that nutritional disturbances seen in tropical countries, such as beri beri, may be due to improper radiation rather than a lack of vitamines.

Beulah Cushman.

Lose, Peter, **Disinfection of the lid border.** Zeit. f. Augenh., 1927, v. 61, April, p. 348.

Lose finds that, although a great deal of painstaking work has been done on the bacterial flora of the conjunctiva bulbi and its pathological influence on intraocular operations, as well as on the influence of cleansing and disinfecting measures, very little work has been done as regards the bacterial flora and the disinfection of the cilia and the lid border, which he considers of great importance. He finds that disinfection of the lids and cilia is best accomplished with iodin. The removal of lashes, before operation on the eyeball, appears unnecessary if we consider that the lid border, and not the cilia, is found to be the carrier of microorganisms. Among the bacteria found are: nonhemolytic staphylococci, staphylococcus pyogenes aureus, hemolytic staphylococci, and a few anhemolytic streptococci. *David Alperin.*

Manes and Moulie. **Production of artificial abscess in ophthalmology.** La Semana Med. 1928, no. 19, May 10, p. 1170.

Localized inflammation artificially produced is utilized in much the same way and for similar conditions as are already known to be benefited by parenteral injections of foreign protein. From three to five c.c. of chemically pure turpentine are injected subcutaneously in the face, but external to the muscle layer. This is followed by fever, which as in the case of proteins seems necessary in order to produce therapeutic results in addition to the usually accepted applications.

This localized abscess is employed, and the authors are enthusiastic regarding their results in severe injuries or perforations of the globe, incipient panophthalmitis, secondary glaucoma, and acute inflammations of the intraocular tissues, especially those associated with hypopyon. The local effects of the turpentine are referred to as "the abscess of Forchier." Where sympathetic ophthalmia is feared, these turpentine injections are especially indicated, as this complication seldom develops in the presence of frank suppuration. Its effects are lauded in cases of interstitial keratitis, as the method is also advocated in children. *A. G. Wilde.*

Moiseiwk-Koshtoiantz, A. E. **The influence of atropin, pilocarpin, and adrenalin upon the bloodvessels of an isolated eye. Arch. Ophta'mologi** (Russian), 1928, v. 4, part 3, pp. 355-361.

Kravkov's method of studying the action of various substances on isolated organs was used by the author in order to determine vasomotor and pupillary reactions of the eye to atropin, pilocarpin, and adrenalin solutions. A cow's eyeball dissected, after exenteration of the orbit, from surrounding tissues, with the muscles ligated near the sclera, and with a canula introduced into the ophthalmic artery was employed. Atropin solutions thus passed through the vascular system of the eye proved to have a definite vasodilating action, increasing in higher concentrations and demonstrable even after preliminary constriction of the blood vessels by pilocarpin and adrenalin. The action of pilocarpin was uncertain, the same concentration causing at one time a dilatation at another time a constriction of the blood vessels. Adrenalin, while having no vasomotor action in low concentrations, produced a narrowing of the blood vessels in a moderate concentration. The pupillary reactions of the isolated eye were the following: extreme mydriasis to atropin, moderate mydriasis to adrenalin, miosis to pilocarpin. *M. Beigelman.*

Mylius, K. **Experience with radiation treatment of tuberculous disease of the anterior segment of the eye.** Zeit. f. Augenh., 1927, v. 61, Mar., p. 230.

Irradiation should be used in those cases in which constitutional specific, nonspecific, and other treatments have failed. Among the diseases mentioned are tuberculous conjunctivitis, tuberculous keratitis, sclerosing keratitis, chronic iridocyclitis without nodular formation, nodular iridocyclitis, and tuberculoma of the ciliary body.

David Alperin.

Ruata, V. **Experimental and clinical research upon a new procedure in trachoma.** Arch. d'Opht., 1928, v. 45, July, p. 417.

In histological preparations from experimental animals an eosinophilia of the ocular tissues followed iontophoresis with distilled water, and penetration of the tissues by copper occurred where copper sulphate was used. In the treatment of trachoma, copper sulphate and picric acid, and later thiosinamin solutions, were used. Iontophoresis was done for ten to thirty minutes every other day. Corneal ulcer contraindicated the treatment. Forty-eight cases of severe trachoma were treated. Fifty per cent showed improvement and scarring of corneal pannus. Twenty-eight per cent quit treatment but were improved. Twenty per cent were unimproved. Detailed technique for iontophoresis is given. *M. F. Weymann.*

Veil, Prosper. **The use of ocular cryotherapy.** Arch d'Opht., 1928, v. 45, July, p. 429.

For the ocular application of carbon dioxide snow an apparatus is described which consists essentially of a hollow metal cylinder with a blunt metal point and an insulating handle. The cylinder is filled with carbon dioxide snow and acetone. The cold is conducted into the tissues through the metal point, which before use is dipped in ninety per cent alcohol. The treatment was found very efficient in small newgrowths of the skin and conjunctiva, in follicular conjunctivitis, and in vegetative conjunctivitis. In chronic trachoma the results were not decisive. For the details of treatment the whole article should be read.

M. F. Weymann.

Zur Nedden, **External use of iodin in diseases of the eye.** Zeit. f. Augenh., 1927, v. 61, Mar., p. 247.

The author uses iodin (1) as a disinfectant and (2) as a counterirritant in producing hyperemia. He prepares his solution as follows: iodin 1 to 1000 with 10 of potassium iodide to bring the iodin into solution. He also uses aniodized vaseline 1 to 200: no KI is necessary for the ointment. The rapid disappearance of the pneumococci from the secretions in dacryocystitis is remarkable. The iodin solution is used hypodermically in chronic low-grade serous iridocyclitis. In luetic cases, and in keratitis parenchymatosa, which should be considered as luetic in the majority of cases, the iodin solution gave no results. *David Alperin.*

3. PHYSIOLOGIC OPTICS, REFRACTION AND COLOR VISION

Adler, F. H. **A comparative study of the rôle of pigment in the physiology of vision.** Arch. of Ophth., 1928, v. 57, July, pp. 346-360.

The writer is struck by the fact that all organs of vision, with one or two exceptions, are pigmented in some form or other. This condition is no more than should be expected when one considers that pigmented tissues absorb the light, while unpigmented ones allow it to pass through. He discusses five types of pigment: (1) the pigment of the chromatophores found in the choroid and iris; (2) the pigment epithelium of the iris; (3) the pigment epithelium of the pars iridica retinæ, notes being made of the transition from the pigment epithelium to the muscle cells of the dilator pupillæ, and from ameboid movements to those controlled by the central nervous system; (4) the pigment of the pars optica retinæ, especially with regard to its action upon the rods and cones. In this connection the author mentions the theory that the pigment found in the pars optica sensitizes the rods and cones to dark adaptation. He also discusses the possibility that this layer may be the percipient element which transforms light impulses to nerve impulses. He does not hold with this view, however, but rather believes that the pigment has a direct influence upon the rods and cones in their sensitization to light. Finally he considers the pigment rhodopsin and its influence upon dark adaptation. The article is most interesting and will repay careful study. An ample bibliography accompanies it. *M. H. Post.*

Heinonen, Oskar. **The connection between myopia and astigmatism.** Acta Ophth., 1928, v. 6, no. 2, pp. 145-156.

Heinonen feels that the question of a dependence between myopia and astigmatism can only be answered by a study of nonselected cases, preferably of similar age. So far as his investigations were concerned he does not agree with Steigers and Siegrist that there is a definite dependence between myopia and astigmatism.

E. M. Blake.

Holm, Ejler. **Myopia and corneal maculæ.** Acta Ophth., 1928, v. 6, no. 2, pp. 157-164.

Instead of the usual method of determining the percentage of myopes with corneal opacities, Holm has reversed the procedure and studied a large series of cases of corneal maculæ, en-

deavoring to elucidate their importance for the occurrence of myopia. The patients were adults and a high percentage had had phlyctenular keratitis. Of 254 cases of maculæ forty-three per cent were in myopes. In this author's private practice the general myopia percentage was twenty-three, while the percentage in cases with maculæ was forty-seven. In unilateral cases the eye affected with a macula deviated from the other eye in the direction of a more marked myopia, or less hyperopia, in double the number of cases showing the opposite relationship.

The age factor is important. The development of myopia after the fourteenth year in sequence to ocular diseases involving formation of corneal opacities seems to be exceptional. There is in these cases another factor than heredity, and the unilateral cases of maculæ with increase in refraction in the affected eye indicate that the cause should be looked for in the eyeball itself, as is the case with reading myopia. The author believes that the irritation of the anterior segment of the globe affects the tonus of the ciliary muscle, and that this leads to changes in the growth of the eyeball. The question of the etiological significance of corneal opacities must be considered unsolved as far as excessive myopia is concerned, but for myopia in general these statistics are confirmation of a connection between the two conditions. *E. M. Blake*

Maddox, E. E. **An accommodative balance test.** Brit. Jour. Ophth., 1928, v. 12, July, p. 374.

The apparatus for this fest consists of two rectangles of paper, red and green respectively, one close above the other, with a little black lettering on each, and mounted on the middle of a black disc in an ordinary trial-lens ring. There are two ways of using the test. The first consists of making the chart gradually recede until the letterings on the two papers appear equally vivid. This will generally be found to take place considerably further away than the punctum proximum. The second and more useful method is to hold the little device at the patient's reading or working distance, while plus spheres are mounted over his static refraction until the letterings agree.

The first mode of applying the test tells us the distance of what for the want of a better word is temporarily called symphoria, a condition in which the accommodative far point tends, at ease, to coincide with the point of intersection of the visual lines. The second (stationary) mode of applying the test tells us the accommodative phoria at the reading or working distance, a piece of information which ought to help us in the correction of presbyopia as soon as a sufficient number of experiments have been made. (One illustration.) *D. F. Harbridge.*

Tschermak, A. **Binocular vision and optic nerve decussation.** Zeit. f. Augenh., 1927, v. 61, March, p. 205.

After describing very interesting experiments on objective determination of the position and extent of binocular space, the author concludes that the various vertebrates have a certain binocular visual space, irrespective of whether the optic fibers undergo total or partial decussation. In the lower class of vertebrates, with complete decussation and with laterally placed eyes, the common visual space is obviously more limited than that in the higher animals with frontal eyes, and with more or less definite semidecussation. There is no doubt that the binocular visual space is developed for binocular single vision as well as binocular plastic vision. The sensorial cooperation of both retinas within the binocular visual space is not unlike that found in man. The essential difference consists in that the visual lines diverge in animals and their fovea does not lie in the binocular domain of the retinas but outside of them temporally. *David Alperin.*

4. OCULAR MOVEMENTS

Collomb, A. **Voluntary nystagmus.** Ann. d'Ocul., 1928, v. 165, June, pp. 427-432.

The author cites one personal observation in a young man and gives a summary of seventeen other cases. His case seems to be the only one of a familial type in that another brother had the same facility. In general, voluntary nystagmus seems to be horizontal, though one case of rotatory has been reported. Vision is good, and in this as in miner's nystagmus the fixed objects seem to be moving synchronously with the ocular oscillations.

L. T. P.

Kirby, D. B. **A modified Motais operation for blepharoptosis.** Arch. of Ophth., 1928, v. 57, July, pp. 327-331.

The author describes the various steps of a modification of the Motais operation for the correction of ptosis. The entire operation is done through a skin incision. The muscle is exposed by a horizontal section through the skin and orbicularis down to the tarsus, eight mm. above the lid margin, then eight mm. above the tarsal border an incision is made exposing the superior rectus, from which a central tongue is dissected four mm. wide by ten mm. long. This tongue is transplanted in front of the tarsus and is drawn downward by a suture which is brought out and tied at the lid margin. A second suture may be placed to hold it in firm apposition to the tarsal cartilage. It is not necessary to reunite the levator.

M. H. Post.

Lancaster, W. B. **The Ames spectacle device for the treatment of cyclophoria, with a report of a successful case.** Arch. of Ophth., 1928, v. 57, July, pp. 332-338.

The writer describes the successful correction of a positive cyclophoria of two degrees in each eye. In this case the power to overcome positive cyclophoria was large, but to overcome negative cyclophoria almost zero; and after fatigue a real cyclotropia appeared. Professor Ames developed a spectacle to correct this difficulty, using the principle that if a mirror is held vertically at forty-five degrees to the line of vision an image of the wall to the right or left, as may be, will be seen with its vertical lines vertical and the horizontal ones horizontal. Now if the mirrior is tilted the image is moved up or down and tilted. By inserting a second mirror, objects directly ahead are seen. A prism corrects the upward or downward deviation. A plus lens between the two mirrors and a minus lens between the second mirror and the eye enlarge the image reduced in size by the longer course of the rays of light traveling from the object to the eye through the mirror combination. A diagram clearly explains each of these points in the corrective apparatus, which bids fair to become a real advance in the treatment of these very difficult cases.

M. H. Post.

Marlow, F. W. **Eye-strain in relation to functional neurosis.** Arch. of Ophth., 1928, v. 57, July, pp. 339-345.

In this paper Marlow emphasizes the fact that great caution should be used in declaring any case of eye-strain to be due to functional neurosis, and that very few ocular examinations are sufficiently complete to justify such a diagnosis. In support of this statement he describes a case of muscular imbalance in which the diagnosis was missed by about a dozen consultants and was finally corrected by the wearing of an occlusive bandage for one week previous to the muscle tests, with very satisfactory result. The emphasis of the paper seems rather to have been placed on this method of examination than upon the subject which the title would indicate. *M. H. Post.*

Sjøgren, Henrik. **Conjugate ocular muscle spasm in chronic epidemic encephalitis.** Acta Ophth., 1928, v. 6, no. 2, pp. 97-109.

Sjøgren studied 145 cases of chronic epidemic encephalitis and found that 7.6 per cent of the cases had attacks of tonic conjugate deviation of the eye. The eyes usually deviate upward, but at times laterally, especially outward. Very rarely the deviation is downward, and cases have been described in which

the direction varied in different attacks. As a rule the eyes are widely open during the attack and cannot be closed voluntarily. In other cases there is a clonic blepharospasm with tremor of the eyelids. The onset is sudden and independent of the will and lasts from a few minutes to several hours. At times psychic disturbances are superadded. Very often the patient presents other Parkinsonian symptoms, and facial weakness is not unusual during the attack. Various theories are offered by numerous authors to explain these peculiar attacks but no definite site or lesion has been found.

E. M. Blake.

Vom Hofe, K. **On paralysis of divergence.** Zeit. f. Augenh., 1927, v. 61, Jan., p. 54.

The writer mentions a case of peculiar muscular disturbance with diplopia, and assumes it to be a paralysis of divergence. This he differentiates from spasm of convergence and spasm of accommodation and pupillary contraction, which were not present in this case. Abducens paralysis was not considered, as no limitation in that field was determined. The author mentions various theories on the probability of a special center for divergence. He concludes that there is no such center, because paralysis of convergence etiolcgically connected with encephalitis, tabes, multiple sclerosis, and other diseases of the central nervous system is rare in comparison with other eye muscle disturbances.

David Alperin.

5. CONJUNCTIVA

Caramazza, F. **Trachoma and angioneurosis.** "Saggi di Oftalmologia," (collected papers, Di Marzio clinic, Rome), 1928, p. 50.

In certain trachomatous subjects, for the most part those with corneal pannus, there was noticed a palpebral swelling resembling angioneurotic edema. The author notes the following symptomatology: palpebral edema extending over the periorbital region, circular, bilateral, with cutaneous hyperemia, without increase of temperature of the parts and without alteration of sensibility of the skin; edema of the conjunctiva, with puffiness of the pannus itself; nasal symptoms arhydrorrhea, edema of the mucous membranes, and frequent sneezing. In prior literature this edema was considered an inconstant accompaniment of the trachoma itself instead of a special and separate phenomenon to be found in certain trachomatous cases.

The edemas (palpebral, conjunctival, corneal) can be considered as dependent upon vasomotor phenomena secondary to alterations of the sympathetic nervous system. The nasal symptoms are possibly due to involvement of the sphenopalatine ganglion through the sympathetic filaments from the carotid plexus. We are dealing with an angioneurotic edema of the type described by Quincke, and this opinion is further strengthened by the presence of urticaria in several of our cases.

Angelucci has shown the relationship that trachoma can have with alterations in the sympathetic nervous system and with imbalance of the glands of internal secretion. The presence of trachoma does not depend upon this loss of equilibrium of the endocrine-sympathetic system, but the condition assumes a character more grave in those cases in which such functional disturbance is present.

The disappearance of the circular edema, and the amelioration of trachomatous lesions in some cases, was effected by the use of adrenalin alone in some instances, by the use of adrenalin and pilocarpin in others, and with adrenalin and atropin in still others. Nasal symptoms responded to tampons of cocaine and adrenalin.

Solon L. Rhode.

Koopmann, H. **Lateral granular conjunctivitis.** Münch. med. Woch., 1927, v. 74, Jan. 14, p. 50.

Koopmann considers lateral conjunctivitis of the lower lids as a sign of "status lymphaticus" and not of tuberculosis as Saathoff thought.

Beulah Cushman.

Lagrange, Henri. **Vernal conjunctivitis.** Ann. d'Ocul., 1928, v. 165, May, pp. 345-358.

Four cases of vernal conjunctivitis in which there was an endocrine disturbance combined with a protein sensitivity to certain pollens are cited. The usual occurrence of this trouble at the time of puberty and its relief soon thereafter are pointed out. This is suggestive of an endocrine basis. In one case described there was testicular insufficiency. The three that received orchitic therapy were rapidly relieved of the trouble. *L. T. P.*

Morax, V. **Conjunctival affection characterized by pseudomembranous keratitis, with perforation and recurrent granulomata.** Ann. d'Ocul., 1928, v. 165, June, pp. 401-421.

Two cases of the above condition are reported. The first was that of a two and a half year old child observed for five years. A granuloma of the conjunctival surface of the upper lid which was covered by a pseudomembrane was repeatedly excised. This was followed again and again by recurrence. Finally the cornea became involved and perforated. Later an enucleation was done. Ultimately ultraviolet light therapy had controlled the tumor for eighteen months when this report was written. The author found no organism in cultures or by animal inoculation of tumor material. Sections showed lymphocytic infiltration, and in the deeper tissues hyaline masses Between these layers was a network of newly formed blood vessels. The diagnosis was infectious granuloma. The usual affections, such as diphtheria, tuberculosis, and syphilis were ruled out.

The second case, occurring in a six year old child, was very similar. Two other cases by different authors are cited, and the conclusion reached that they represent a disease sui generis.
L. T. P.

Morelli, E. **The symptomatology of beginning trachoma.** Arch. di Ottal., 1927, v. 34, June, pp. 256-258.

The author emphasizes the importance of Gonella's observation that trachoma usually begins with an acute catarrhal conjunctivitis, which is differentiated most definitely from other types of conjunctivitis by the absence of characteristic organisms of these types. He has also seen the picture of an acute pseudomembranous conjunctivitis without characteristic organisms, as the initial stage of trachoma. *S. R. Gifford.*

Santori, G. **Severe cases of vernal catarrh with corneal involvement.** Arch. di Ottal., 1927, v. 34, pp. 132-144. (See Section 6, Cornea and sclera.)

Sgrosso, Salvatore. **The pathologic anatomy of trachoma and follicular conjunctivitis.** Arch. di Ottal., 1927, v. 34, June, pp. 262-272.

Thirty cases of these two conditions were studied histologically. Although there are intermediate stages in which even the histologic differentiation may be difficult, the author's observations leave him no doubt that typical cases represent entirely different conditions which may be distinguished even in the earliest stages. In follicular conjunctivitis, the follicles are accumulations composed almost entirely of lymphocytes, without signs of inflammation in the surrounding tissues, or tendency to formation of new connective tissue. Trachomatous granules, on the other hand, contain besides lymphocytes other types of mononuclear cells, and some polymorphonuclears are surrounded by inflammatory changes, and show early the tendency to formation of new connective tissue, which in the cicatricial stage replaces the granules. The follicle is composed of lymphadenoid tissue of a form normally seen in the embryo, while the trachomatous granule is the result of an inflammatory process.
S. R. Gifford.

Tallei, E. **A rare formation of leptothrix epidermidis encountered in the conjunctival sac after exenteration.** Ann. di Ottal., 1927, v. 55, Nov.-Dec., p. 901.

In the conjunctival cavity ten months after exenteration of the globe, no prothesis having been worn, was found a mass of organic substance about the size of an almond, dry, elastic, dirty yellow-white, and consisting microscopically of a net-work of filaments of mycotic origin, belonging to the genus Leptothrix epidermidis of Bizzozero. In the middle of the mass of filaments was a variety of amorphous material including desiccated epithelial cells, leucocytes more or less degenerated, secretions from the conjunctiva and tarsal glands, together with numerous saprophytic organisms as well as bacillus mesentericus and bacillus subtilis. *F. Park Lewis.*

Urbanek, Joseph. **Light dermatosis and light conjunctivitis.** Zeit. f. Augenh., 1927, v. 61, Jan., p. 66.

The author describes a vesicular, periodic eruption on the exposed parts of the body, with itching, and classifies it with vernal catarrh. These dermatoses appear in early spring and disappear spontaneously in the fall, leaving no traces.

According to M. Moller, these dermatoses are possibly related to tuberculosis, and he believes that lupus erythematoides discoides belongs to the light dermatoses. Volk and Grosz have found that, in persons sensitive to light, symptoms of dermatoses are brought out by intracutaneous injection of dead tubercle bacilli. This perhaps helps to explain the occurrence and periodic appearance of tuberculous eye diseases, not finally the importance of light in the treatment of tuberculosis. *David Alperin.*

Werner, Sigurd. **The frequency of phlyctenular eye diseases at the Ophthalmic Clinical Hospital in Helsingsfors during the last twenty-five years.** Acta Ophth., 1928, v. 6, no. 2, pp. 138-144.

Werner finds that phlyctenulosis had diminished during the past twenty-five years. Both absolutely and relatively the cases at Helsingsfors show a considerable decrease, and, strangely, the decline corresponds fairly accurately to the decline of trachoma. The percentage of decline of trachoma has been steady, but phlyctenular diseases showed a moderate increase in 1903 and a larger one in 1919 and 1920. The latter was related to a severe influenza epidemic and may have been partly a post-war effect.

The parallelism between phlyctenular diseases and trachoma at Helsingsfors seems to indicate that both have about the same extension in Finland, the former probably being more common. As a cause of amblyopia phlyctenular diseases are at least as important as trachoma, but as a cause of blindness they are much less important. *E. M. Blake.*

Werner, Sigurd. **Seasonal changes in the frequency of phlyctenular eye diseases and trachoma.** Acta Ophth., 1928, v. 6, no. 2, pp. 132-137.

Werner studied the incidence of phlyctenulosis and trachoma at the Helsingsfors Ophthalmic Hospital from 1912-1926. Phlyctenular diseases represented 5.7 per cent of all the cases admitted. He concludes that the frequency of phlyctenular disease in Finland is subject to seasonal changes, the number of cases increasing in the spring and decreasing during the summer and autumn. The favorable effects of the summer are felt up to February of the following year. This corresponds, in general, to the seasonal variations of tuberculosis. Trachoma shows no definite seasonal variation in his clinic. *E. M. Blake.*

6. CORNEA AND SCLERA

Bursuk, G. G. **The formation of antibodies in local immunization of the cornea.** Arch. Ophtalmologii (Russian), 1928, v. 4, part 3, pp. 333-354.

In his former experiments, reported in 1926, the author proved that in local immunization of the eye bacterolysins and agglutinins appear in the aqueous humor earlier and in greater amount than in the serum. In order to establish the primary source of these anti-

bodies he recently investigated the immunologic reactions of the cornea, aqueous humor, iris, conjunctiva, and blood serum in three groups of locally immunized rabbits. As antigens the vaccines of Bacillus typhi (group 1) and of Staphylococcus pyogenes aureus (groups 2 and 3) were used intracorneally. A comparative determination of the presence of agglutinins (group 1), opsonins (group 2), and bacteriolysins (group 3) in the various tissues of the eyes as well in the blood serum proved that all these antibodies had been formed primarily in the immunized tissue itself, i.e., in the cornea.

M. Beigelman.

Car, A. **A new kind of nodular degeneration of the cornea, with anatomical findings similar to those usually met with in Groenouw's disease.** Zeit. f. Augenh., 1927, v. 61, April, p. 333.

This article contains a clinical, anatomical and histological description as well as a historical bibliography of Groenouw's disease. It does not lend itself for abstraction. *David Alperin.*

Cattaneo, D. **Marginal degeneration of the cornea.** Ann. di Ottal., 1926, v. 54, Dec., pp. 1291-1309.

Two cases of this condition are described, and illustrated by very good colored plates, including pictures of the optical section with the slit-lamp. These plates give a clearer idea of the condition than any others which the reviewer, in a previous review of this subject, was able to find. Both cases showed three features which the author considers characteristic of the condition, (1) peripheral vascularization of the cornea, (2) a circular opacity resembling arcus senilis and separated from the limbus by a clear zone, (3) diffuse or circumscribed thinning of the cornea in this peripheral zone.

The first case was peculiar in the presence of several small cysts in the peripheral zone of each eye, one of which increased in size so that the author was obliged to remove the anterior wall with the lance. Sections showed a vascularized connective tissue with some hyaline degeneration. Aside from these cysts, the peripheral zone, as is usual, showed a furrow concave anteriorly. The second case showed in one eye an ectasia of the thinned cornea in this peripheral zone above, which produced a fairly marked myopic astigmatism against the rule, while in the other eye, which was affected more recently, the usual furrow was present without ectasia. The literature is reviewed. Only a few cases were found showing structures which could be interpreted as cysts similar to those seen in the author's first case, and in none of these was histologic examination made. Both the author's cases showed a marked hypercholesterinemia, and he believes that this may be the principal factor in causing the deposits in the peripheral cornea, which in arcus senilis are known to be derivatives of cholesterin, the presence of these deposits producing in some way the degeneration and thinning of the cornea. (Bibliography.)

S. R. Gifford.

Di Marzio, Q., and Salvatori, G. B. **Roentgen therapy in ulcerative keratitis.** "Saggi di Oftalmologia," (collected papers, Di Marzio clinic, Rome), 1928, p. 3.

The authors report on a series of fifty cases of various forms of ulcerative keratitis in which the usual methods of treatment had been of no avail and in which the prognosis had been unfavorable. They used a strong ray, very well filtered to avoid producing lesions of the eye, and yet to permit irradiation through closed lids. The amount of initial dosage varied from twenty to thirty per cent of the erythematous dose to fifteen and ten per cent in later treatments in the cases which showed improvement. The average interval between treatments was seven days. Total dosage amounted to forty, eighty, and 100 per cent, and in serpiginous ulcer to 125 per cent. Of the series thirty-seven or seventy-four per cent were cured, eight improved, and five unimproved. Doses

relatively higher (seventy-five per cent of erythema dose, for example), although efficacious, should not be used because they inhibit vascular proliferation. *Solon L. Rhode.*

Fuchs, A. **Proliferation of the corneal endothelium.** Zeit. f. Augenh., 1927, v. 61, Jan., p. 1.

The author believes that the endothelium is destroyed by toxin, which in the case of keratitis e lagophthalmo is a cytotoxin; the destruction depending upon the concentration of the toxin.

The endothelial like the epithelial cell, in its process of repair, has a tendency to proliferate, covering the defect around the remaining cells.

Clinically it is important to know that the nodular yellow precipitates in purulent keratitis are due to endothelial proliferation, and that some pus cells accumulate between Descemet's membrane and the endothelial proliferation proper. These precipitates are found in the anterior chamber and are similar to the endothelial proliferation at the border of endothelial defects in suppurative corneal inflammations, as for example in perforations, suppuration of corneal wounds, perforated ulcus serpens. These are not real precipitates of dead and necrotic cells, but are clumpings of live, freshly accumulated endothelial cells.

There are perhaps two instances in which endothelial defects may occur: First, through suppurative lifting which results in tear of the pus bag, and proliferation of the remaining endothelial cells; second, in consequence of a strong toxic action of the formed toxin, when the cells are killed and disappear. The first is probably the case in less toxic keratitis, such as e lagophthalmo and keratomalacia, and the second in necrosis of the cornea subsequent to a decomposing intraocular sarcoma.

The author concludes by emphasizing that the endothelial cell, in its behavior, in many instances is similar to the epithelial cell of the cornea.

David Alperin.

Jasinski M. **Heteroplasty of the sclera in a case of scleral staphyloma.** Klin. Oczna, 1928, April, p. 38.

In a case of scleral staphyloma several attempts to correct the condition by perforations and conjunctivoplasty were unsuccessful. A complete flattening of the staphyloma, with an increase of visual acuity, was accomplished through the following heteroplastic procedure. After the staphyloma had been cauterized and punctured, a scleral plate taken from a freshly enucleated child's eye was transplanted upon its surface and covered by conjunctiva. During the healing a gradual resorption of the scleral plate and its replacement by newly formed connective tissue could be observed. *M. Beigelman.*

Kottenhahn, Hermann. **Tattooing of the cornea with gold chloride solution by Knapp's method.** Klin. Woch., 1927, v. 6, Mar. 26, p. 604.

The patient had a dense leucoma following phlyctenular keratitis. A four mm. pupil was outlined with Hippel's trephine and this area impregnated with three per cent solution for five minutes. Twelve days later a seven mm. area was prepared and the whole area again impregnated. After a day the pupil in the center was black, and the surrounding ring a lighter brown, corresponding imperfectly, but quite satisfactorily to the gray-blue iris of the other eye. *Beulah Cushman.*

Levkoieva, E. F. **Pathology of primary degenerations of the cornea.** Russkii Opht. Jour., 1928, v. 7, May, pp. 544-576.

A thorough review of the literature on primary degenerations of the cornea is followed by a description of the histopathological and microchemical changes in the cornea in the author's case. The epithelial layer of the cornea was atrophic, Bowman's membrane was hardly distinguishable, and the stroma was in many parts replaced by granulation tissue, rich in capillaries and in polymorphous cellular elements.

The main changes, of degenerative character, were manifested by the presence beneath the epithelium of a substance which proved to be amyloid (staining with Congo red). While the upper part of this mass was compact and solid, the lower part was rather soft and consisted of a number of peculiarly changed arteries. The walls of the arteries were enormously thickened, as a result of amyloid degeneration, and the presence of endothelial cells around the slit in the center of these spherical formations was the only proof of their vascular nature. The author is inclined to think that amyloidosis of the cornea, which has been established in her case, is the pathologic diagnosis for the majority of corneal "dystrophies."

M. Beigelman.

Luppino, G. **The etiology of lymphatic keratoconjunctivitis in infants.** Ann. di Ottal., 1926, v. 54, Nov., pp. 1209-1221.

The author examined the blood picture of fifty-seven patients from two to fourteen years of age. In fifty-two a definite reduction in the red cells, with corresponding reduction in hemoglobin, was present. The white count was within the upper limit of normal, but fifty-two patients showed a relative lymphocytosis of twenty-eight to thirty-eight per cent. The thirty cases showing the most marked anemia (red blood cells 3,000,000 to 3,500,000) all gave a positive von Pirquet. Of fourteen with moderate anemia, twelve gave positive reactions, while of eight with only slight anemia, the reaction was positive in only one, and the five with normal red counts all gave negative reactions. Only six showed other signs warranting a diagnosis of tuberculosis, while forty-four showed other signs of lymphatism, three were scrofulous, and four were rachitic. The finding of a positive von Pirquet in forty-three of fifty-seven cases, and the correspondence of the reaction with the degree of anemia, together with the lymphocytosis, seems to the author to indicate the presence of a tuberculous condition in most cases. (Bibliography.)

S. R. Gifford.

Morelli, E. **The influence of diet on the ocular diseases of infancy.** Arch. di Ottal., 1927, v. 34, June, pp. 273-279. (See Section 5, Conjunctiva.)

Neuschuler, I. **Roentgen therapy in parenchymatous keratitis.** "Saggi di Oftalmologia" (collected papers, Di Marzio clinic, Rome), 1928, p. 29.

A large percentage of the cases of parenchymatous keratitis are cured or improved by Roentgen therapy. Such good results are obtained even in those patients in whom the condition has proved itself rebellious to the other forms of treatment over a long period of time. The sequelae also respond to the ray treatment. In the cases which are amenable to the ordinary methods of treatment, the use of the x-ray is preferable, as it shortens the course of the disease. Small stimulating doses of the ray are used, and repeated over a number of weeks.

Solon L. Rhode.

Nicoletti, G. **Hemorrhagic bullous keratitis.** Ann. di Ottal., 1926, v. 54, pp. 1091-1096.

The literature on epithelial dystrophy with bleb formation is discussed, and two cases, of a type not previously described, are reported. Both occurred in eyes with absolute glaucoma. In the first case the appearance of the bleb coincided with the hemorrhage in the anterior chamber, the bleb filled with blood being near the inner limbus. The sections showed the bleb to be between the normal epithelium and Bowman's membrane. New-formed capillaries from the limbus emptied into the bleb. In the second case the cornea, degenerated from glaucoma, was the seat of subacute inflammatory changes, and destruction of new-formed vessels by this process had caused hemorrhages between Bowman's membrane and a layer of vascular connective tissue under the epithelium. Increased tension and degeneration of

the vessels are necessary factors in producing the condition.

S. R. Gifford.

Saba, V. **Rare malformation of limbus in a hydrocephalic.** Ann. di Ottal., 1927, v. 55, May-June, pp. 446-452.

The patient was a man of twenty-one years who had developed hydrocephalus during the first few months after birth. Both eyes showed a white band in the cornea, one-half to one and one-half millimeters from the limbus of each eye. The band encircled the cornea with the exception of the upper quadrant in each eye. The cornea between this line and the limbus showed a grayish opacity. The slit-lamp examination localized the opacity on the posterior surface of the cornea, with white threads connecting this to the iris root. The iris was normal except for a scantiness of crypts. The band was interpreted as an abnormally developed corneoscleral trabecula. This structure normally stops short of the limbus and marks the outer limit of Descemet's membrane, which in the normal eye has a circumference greater than that of Bowman's membrane, whereas in the present case Descemet's membrane was smaller in circumference than Bowman's membrane. The author was able to find three similar cases in the literature. These were evidently of essentially the same kind as this case, but showed more distinct changes in the iris. *S. R. Gifford.*

Safar, Karl. **Pyocyaneus infection of the cornea.** Zeit. f. Augenh., 1927, v. 61, Jan., p. 25.

In a previous article (v. 58, p. 269), it was reported that fulminant pyocyaneus infection of the human cornea was successfully transmitted to the rabbit's cornea, with ring abscess formation. Bacillus pyocyaneus was subsequently recovered. The human strain is most virulent, and the infection is predicated upon lesion of the epithelium. The infection may result in a simple infiltration in disciform keratitis, or in ring abscess, depending upon the virulence of the bacillus. Immunity is not conferred upon the offspring. *David Alperin.*

Santonastaso, A. **Corneal degeneration in trachoma.** Ann. di Ottal., 1927, v. 55, May-June, pp. 620-639.

The author reports four cases of the corneal degeneration in trachoma previously reported by Berlin, Rubert, and Gallenga as hyaline degeneration. In most of these the upper third of the cornea was covered by yellowish tissue, raised slightly above the surface of the cornea, and supplied by conjunctival vessels. With higher magnification, the yellow was seen to be concentrated in small masses separated by vessels. The opacity seldom extended past the middle of the pupil and in only one case was it accompanied by ordinary trachomatous pannus. All the cases showed signs of trachoma, but in several this was considered to be healed. Sections showed the presence of new connective tissue with thin-walled vessels under the epithelium. Bowman's membrane was absent. The superficial layers of the cornea were swollen and of a waxy appearance. Differential stains for amyloid were positive in three out of four cases. In this particular the author's findings differ from those of previous reporters, all of whom found hyaline only.

All of the present author's patients showed signs of tuberculosis or the tuberculous diathesis. The author believes that both conditions are necessary for the occurrence of the degeneration. The only effective treatment is surgical removal of the opacities, which was successful in all the author's cases. *S. R. Gifford.*

Santori, G. **Severe cases of vernal catarrh with corneal involvement.** Arch. di Ottal., 1927, v. 34, pp. 132-144.

The subject of vernal catarrh is reviewed with special emphasis on the contributions of Italian authors. Angelucci and his school have pointed out the frequency of vernal catarrh in persons of the lymphatic type with no symptoms of vagotonia. One of the earliest studies of the pathology was

by Reymond. The few severe corneal complications reported are central scars and pannus. The author's patient was a boy of fourteen years showing the bulbar type of vernal catarrh. The opacities had involved the cornea, so that only a third of that in the right eye was transparent, and in the left eye even less. Vision was right eye 2/7, left eye 1/5. Treatment by adrenalin, acetic acid, and subconjunctival injections of sodium chloride and thyroid extract resulted in clearing of the opacities, with improvement of vision to 1/2 in each eye. Bibliography.) *S. R. Gifford.*

Vestergaard, J. D. E. **Subepithelial hematoma of the cornea.** Acta Ophth., 1928, v. 6, no. 2, pp. 173-180.

Vestergaard's patient was a woman of fifty-three years who had had symptoms of conjunctival irritation for one month. When first seen the right eye showed a slightly raised, gray infiltrate located between seven and eight o'clock. This disappeared within one week under novoform ointment. One week later, without preceding trauma, a small hemorrhage appeared in the cornea, immediately below the epithelium, measuring three by two mm. and not reaching to the limbus. Three fine vessels ran from the limbus to the vesicle. Two days later a conglomerate of blood-filled vesicles occupied the central third of the upper half of the cornea, with a clear zone between the limbus and the vesicles. The slit-lamp showed the blood to be between the epithelium and Bowman's membrane, with the rest of the cornea healthy. The blood was absorbed rapidly. The patient had no blood disease, and the blood count as well as the urine was normal. Cultures of the vesicle contents gave only xerosis and staphylococcus. Tension was twenty-two mm. in each eye (Schiøtz). The author believes that the hemorrhage came from the rupture of a marginal vessel into a previous bullous (?) keratitis, probably from a slight trauma.

E. M. Blake.

Weinzenblatt, Sprinza. **A peculiar central corneal change.** Zeit. f. Augenh., 1928, v. 64, April, p. 366.

A peculiar corneal lesion is described which was first seen in two octogenarians with cataract and in a third patient aged sixty-seven years. A systematic search revealed three more cases among 244 octogenarians in an institution and none at all in 300 individuals between sixty-five and eighty years of age who came to the clinic for presbyopia, cataract, and so on. The lesion is always bilateral, occurs in eyes free from irritation, diminishes the visual acuity but slightly if at all, and consists of a characteristic corneal haze. This haze is limited to the deeper parenchymal layers in a central area three or four inches in diameter. It is composed of tiny triangular and polygonal greyish plates disposed to form rosettes, and these are placed to form a wall-paper-like design.

F. H. Haessler.

Werner, Sigurd. **Seasonal changes in the frequency of phlyctenular eye diseases and trachoma.** Acta Ophth., 1928, v. 6, no. 2, pp. 132-137. (See Section 5, Conjunctiva.)

Werner, Sigurd. **The frequency of phlyctenular eye diseases at the Ophthalmic Clinical Hospital in Helsingsfors during the last twenty-five years.** Acta Ophth., 1928, v. 6, no. 2, pp. 138-144. (See Section 5, Conjunctiva.)

7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Krause-Wichmann. **Gastric secretion and the pupils.** Klin. Woch., 1926, v. 5, Oct. 15, p. 1963.

Krause-Wichmann checked the report of Adlersberg and Kauders on miosis in patients with normal and hyperacid gastric juice in comparison with patients whose acidity was below normal. In thirty-four patients they found no change in pupillary reaction from the normal, using Schlosser's pupillometer. *Beulah Cushman.*

Montalti, M. **Clinical and histologic contribution to tuberculosis of the iris.** Ann. di Ottal., 1927, v. 55, May-June, pp. 419-427.

After a brief review of the literature, the author reports four cases, with histologic examination. The first was one of conglomerate tubercle, occurring in a child of three years. Three-fourths of the anterior chamber was filled with the mass, which arose from the iris, replacing the greater part of it. The posterior parts of the eye were scarcely affected, but the process could be seen in sections to extend through the sclera in the perivascular lymph spaces. Many tubercle bacilli were seen in the iris and ciliary body. The second case was one of multiple tubercle of the iris, which showed the unusual condition of involvement of the lens in the tuberculous process, with the presence of bacilli in that organ. The third case showed a conglomerate tubercle of the iris, which had penetrated the sclera at the limbus, forming a subconjunctival nodule of tuberculous granulation tissue. In the fourth case, both anterior and posterior chambers were filled with tuberculous tissue, which replaced the iris entirely, and penetrated the sclera in two places. Three of the patients were children. In all cases the process had remained limited to the anterior segment, the ciliary body showing itself especially resistant to invasion, whereas the chamber angle was always invaded. (Bibliography.) *S. R. Gifford.*

Pressburger, Erich. **Isolated peripheral choroiditic patches.** Zeit. f. Augenh., 1927, v. 61, Feb., p. 143.

The isolated patches at the periphery of the choroid are interpreted as due neither to tuberculosis nor to lues. They are found in healthy individuals, and the author believes them to be due to cystoid degeneration of the retina in the aged, although they are also found in the young healthy and nonmyopic eye. Abadie found patches of chorioretinitis in some cases of simple glaucoma. The increased intraocular tension in such cases is due to reflex dilatation of the ciliary vessels or a compensatory hypertrophy subsequent to choroidal destruction. Many cases of idiopathic iritis and cataract of obscure etiology may be traced to chorioretinal disturbances.

David Alperin.

Rauh, W. **Contribution to the knowledge of formation of iridic membranes.** Zeit. f. Augenh., 1927, v. 61, Feb., p. 169.

Chronic inflammation and agglutination of the iris and cornea are the combination with which occurs membranous formation on the iris. Subsequent to the anterior synechiae, through some as yet unknown irritation, a proliferation of Descemet's endothelium occurs, and also deposits on the iris. Various theories and some pathologic illustrations are given.

David Alperin.

Sachs, I. **Iritis from recurrent fever.** Med. Klin., 1927, v. 23, April 29, p. 640.

Two cases of iritis are reported in syphilitic patients who had been under treatment with recurrent fever.

Beulah Cushman.

Sachs, M. **Treatment of detachment of the retina.** Zeit. f. Augenh., 1927, v. 61, Feb., p. 177.

A few cases are mentioned in which detachment of the retina was successfully treated by puncture, with the formation of a subretinal hemorrhage, together with simultaneous milk injections. *David Alperin.*

Satanowsky, Paulina. **Guttate choroiditis.** Arch. de Oftal. de Buenos Aires, 1928, v. 3, no. 8, p. 432.

On account of the similarity between retinitis punctata albescens and guttate choroiditis, the authoress discusses their differential diagnosis and clinical significance. The term retinitis punctata albescens is used to describe a clinical condition in which the retina shows an abundance of small white dots, which do not change to any appreciable extent with time, there

being no associated hemeralopia or visual field changes. These dots are found posterior to the retinal vessels, and located perhaps in the pigment epithelium. The vessels themselves are normal. The dots display little tendency to become confluent, and are of the diameter of a retinal vessel of the second order. There are no pigment changes. The disc may be either slightly yellow or normal, and the affection seems to run in families.

Retinitis punctata albescens	Guttate choroiditis
Present in youth.	In advanced age.
Fine pigment alterations either atrophy or hypertrophy.	Seldom pigmented.
Dots distributed throughout fundus except in macular region.	Most numerous in region of macula.
Hemeralopia and narrowing of the visual field; vision gradually deteriorating.	No hemeralopia or interference with visual field; vision normal.

A typical case of guttate choroiditis is reported occurring in a fifty-two year old man. *A. G. Wilde.*

Tron, Eugen. **Inorganic sulphur and phosphorus in the intraocular fluids and in the blood serum of cattle.** Graefe's Arch., 1928, v. 119, p. 659.

In cattle, inorganic sulphur and phosphorus are present in the intraocular fluids in a smaller amount than in the blood serum. As to the content of inorganic phosphorus and sulphur, differences exist between the aqueous and vitreous humors.

The difference between the chemical composition of the intraocular fluids and the blood serum can be fully explained by physicochemical factors. Comparative chemical observations on the intraocular fluids and the blood serum warrant us in considering the intraocular fluids as an ultrafiltrate of the blood. If the intraocular fluids and the blood serum are subjected to dialysis by being on opposite sides of a collodion membrane to equalize the differences in their chemical composition, their composition remains the same even after seventeen to twenty-four hours dialysis. These experiments prove that in the living organism, existing differences in the chemical composition of the blood serum and the intraocular fluids can be maintained without secretory activity of the cells. *H. D. Lamb.*

8. GLAUCOMA AND OCULAR TENSION

Cucchia, Alberto. **Study of the relation of the sexual hormones to glaucoma.** Ann. di Ottal., 1928, Feb., v. 56, p. 116.

(See also editorial, A. J. O., v. 11, p. 483.)

After a fairly extensive summary of the literature on the association of ocular pathology with sexual conditions, the author studied the tension in women and men upon whom ovarectomies or castrations had been performed. He finds:

1. Negative results to the sudden suppression of sexual glandular activity on the ocular tension.
2. While the administration of ovarian extract on castrated women relieved the general condition, it had no effect on the ocular tension.
3. The administration of ovarian and testicular extract in elderly men and women did not seem to produce an appreciable effect on the tension. *Park Lewis.*

Denti, A. **On the formation of the cicatrix in the Lagrange sclerectomy.** Ann. di Ottal., 1926, v. 54, Dec., pp. 1249-1276.

The literature on the Lagrange operation is reviewed, and its modification by De Lieto Vollaro, employed by the author, is described. The reported cases in which histological examination of sclerectomized globes was performed are quoted, most observers having found that the chief factor which prevented firm and impermeable cicatrization was a prolapse of iris be-

tween the lips of the wound. The author reports histological findings in seven globes enucleated after modified Lagrange operations. He found that where there was no uveal tissue in the scleral wound the sclera proliferated and closed the wound firmly. In one case, this had occurred after nineteen days. The presence of pigment did not prevent this cicatrization, and in only one case did the presence of iris tissue maintain part of the scleral wound uncicatrized. When the tension is controlled, it is by a cystoid cicatrix, involving future danger to the eye. In view of the frequency of such impermeable scars, with resulting return of hypertension, the author concludes that iridectomy is the safer procedure, and that sclerectomy should be reserved for cases of glaucoma which have resisted other operative procedures. (Bibliography and photomicrographs.) *S. R. Gifford.*

Nordensen, J. W. **Gonioscopy and the theories of glaucoma.** Separat ur Upsala Läkarenforenings forhandlinger, ny foljd, 1927, v. 30, nos. 5 and 6, p. 111.

Gonioscopy, the name given by Uribe Troncoso to the examination of the iris angle, has engaged the attention of many research workers, Koeppe, Salzmann, Uribe Troncoso, and Thorburn. Troncoso has devised a special instrument, the gonioscope, and has given accurate descriptions and pictures of the angle. The researches of these authors tend to disprove those theories of glaucoma which are based upon obstruction to outflow of eye fluids as the primary cause. Troncoso reported some cases of glaucoma without synechiæ at the angle and the presence of synechiæ in some cases in which glaucoma had not developed. From a report of over a hundred cases of glaucoma Thorburn concludes that in many if not in the majority of cases the iris angle was open, while in congestive glaucoma there was a larger percentage with closure of the iris angle. (Troncoso objects that Thorburn's researches are open to criticism as he uses only a loupe to observe the angle through the contact glass, illuminating the field with a flash light; the magnification thus obtained, according to Tronsco, being too small for accurate observation.) Koeppe's observation tends to show the cause of glaucoma as clogging of the meshwork of the pectinate ligament and Schlemm's canal with pigment. This does not, however, explain the shallowing of the anterior chamber, nor the difference between simple and congestive glaucoma. For these reasons we must look for other theories of glaucoma.

Nordensen advances the vitreous theory of glaucoma, and states that this not only explains the shallowing of the anterior chamber, even in the absence of obstruction to the outflow, but also the different kinds of glaucoma. For this theory holds that the distention of the vitreous body increases the pressure in the posterior chamber, which in some cases is transmitted to the anterior chamber and in some other cases is stopped by the ocular diaphragm.

In the latter cases we have simple glaucoma with but little or no increase in tension, and deep anterior chamber, while in the former the anterior chamber is shallowed, the iris angle is obstructed and we have the picture of congestive glaucoma. Nordensen concludes with the statement that gonioscopy, while it does not altogether exclude the possibility of obstruction to the outflow by closure of the iris angle with synechiæ as the primary cause of glaucoma, nor clogging of the pectinate ligament by pigment, yet believes that those theories do not satisfactorily explain the other conditions found in glaucoma, while on the other hand the vitreous edema fully explains the changes that take place and the resulting symptoms in the congestive types of glaucoma. *D. A. Swick.*

Procksch, Marie. **Contribution to the visual field in glaucoma.** Zeit. f. Augenh., 1927, v. 61, April, p. 344.

One never finds sector-shaped nasal defects with tubular field and good

central vision in acute congestive glaucoma. This is generally found in chronic glaucoma, while central vision is especially affected in acute glaucoma. The visual field in the acute form of glaucoma is similar to that found in secondary glaucoma, suggesting their close relationship. Iridectomy is indicated in both of these conditions, while in glaucoma simplex it is of doubtful usefulness. The author claims that the frequent incidence of an inferior cone in glaucoma simplex is not a mere coincidence, and that the nerve fibers in a cone are more sensitive to a low rise of pressure than they are in a normal papilla. These phenomena are in agreement with the now prevalent view that field defects in glaucoma are not produced by disturbances in retinal circulation, but through lesion of the nerve fibers in the papilla, as well as through pressure excavation.

David Alperin.

Speciale, Picciche. **Ocular hypotony.** Ann. di Ottal., 1927, v. 55, pp. 640-642.

Disregarding hypotony secondary to various causes with which it is known to be associated, the author discusses essential hypotony, which is always accompanied by marked dilatation of the retinal vessels and the occurrence of vitreous opacities without any of the usual causes. It occurs especially often in myopic eyes and is nearly always present in myopia complicated with cataract. At operation in these cases, the vitreous is found to be liquefied and the cornea often collapses. The most likely explanation of its occurrence is that it is due to diminished secretion, secondary to the atrophy of the ciliary body which occurs in myopia. The hypotony is followed by dilatation of the retinal veins and hence malnutrition of the retina. This may go on to hemorrhages and chorioretinitis, and, if the tension remains very low, the circulatory condition becomes worse and subretinal exudate and detachment of the retina may occur. The occasional occurrence of marked hypotony following a discission for secondary cataract is mentioned. The vision may then diminish markedly but is recovered in a few days after the tension returns to normal. The most important factor in treatment of the condition is the use of a mydriatic.

S. R. Gifford.

Wiechman, E., and Koch, F. **On nondiabetic ocular hypotony in coma.** Münch. med. Woch., 1928, no. 27, July 6, p. 1160.

The authors quote the literature, particularly L. Heine, to show that extreme ocular hypotony in coma is pathognomonic of diabetes. Heine states that this condition is not found in any other type of coma, nor in the last stages of diabetes where the coma is not due to the latter disease but to a general moribund condition. He found hypotony in twenty-one out of twenty-two cases of diabetic coma. The authors found it in five out of seven cases, but they report a case of coma in a young man of twenty-nine years who was a nondiabetic and whose tension during the coma was five mm. Hg by the Schiøtz tonometer. The pathologic diagnosis in this case was acute glomerular nephritis, brain hemorrhage, and the rupture of the ventricles. They concluded that, while ordinarily hypotony in coma means diabetes, there are exceptions to this rule and occasionally a non-diabetic coma may cause ocular hypotony.

M. L. Folk.

9. CRYSTALLINE LENS

Cassell, J. W. **Some observations of the eye clinic of Dr. Henry T. Holland, at Shikarpur, India.** Arch. of Ophth., 1928, v. 57, July, pp. 380-385.

In this paper the author describes the clinic of Dr. Holland in a most interesting manner. There are two operating rooms, one of which is devoted exclusively to cataract work. From January 1 to February 20, 1928, there were 1,240 cataract operations. Some of them were done by the intracapsular method; others using capsulotomy. The first dressings were done on the fifth day. On the ninth

day the patients were generally allowed to go home. In the 1,240 cases, there were less than one per cent infections, two to three per cent vitreous loss, and three per cent prolapse of the iris. Dr. Holland is strictly aseptic, both with regard to his hands and to his instruments. The same cannot be said of the patients. The author is most enthusiastic about the work done in this clinic. *M. H. Post.*

Elkes, George. **Spontaneous resorption of senile cataract.** Zeit. f. Augenh., 1927, v. 63, Sept., p. 102.

The author reviews the opinions stated in the literature as to the cause and mechanism of spontaneous resorption of the cataractous lens, and reports two cases observed in the Königsberg clinic, without, however, shedding any new light on the mechanism or cause of resorption.

F. H. Haessler.

Giannantoni, C. **The renal function in cataractous patients.** Ann. di Ottal., 1926, v. 54, Oct., pp. 1113-1121.

The theories of the etiology of cataract are reviewed, especially those having to do with the chemical composition of the intraocular fluids, and some invoking possible toxins retained by the kidneys. Frenkel had found that the time required to excrete methylene blue was prolonged in cataractous patients. The author made use of the phenolsulphonaphthalein method in examining a large number of persons between the ages of fifty and seventy-five years, with and without cataract. In the noncataractous, seventy to eighty-five per cent of the dye was excreted in the first three hours, while in the cataractous only fifty-five to seventy per cent was so excreted. Examination of the urine offered confirmatory evidence of renal insufficiency, the amount of solids excreted, especially of urea, being less in the cataractous. (Bibliography.)

S. R. Gifford.

Goldschmidt, M. **Cataract from avitaminosis.** Klin. Woch., 1927, v. 6, April 2, p. 635.

With Yoshimoto the author checked the experiments made by Szily and Eckstein. He concludes that the cataracts found in the rats were due to lower temperatures, as the cataracts disappeared when the rats were warmed by the mother. *Beulah Cushman.*

Karelus, K. **On rare forms of acquired cataract in cases of congenital liquefaction of the vitreous body (hydrophthalmic cataracts) and on capsulectomy as its treatment.** Klin. Oczna, 1928, April, pp. 1-10.

The author describes a rare type of cataract which occurs only in eyes with an underdevelopment of the uvea. In six cases of this cataract the iris was of a greenish blue color, with large and numerous lacunæ, and presented a distinct tremor with the movements of the eyeball. The pupillary reaction to light was sluggish, and atropin produced only a slight mydriasis. The fundus whenever it could be examined, was completely depigmented, and the vascular structure of the choroid greatly rarified. The cataract was characterized by a liquefaction of lenticular substance (hence the designation as "hydrophthalmic"), and a capsulectomy proved to be sufficient in the treatment of this condition. The age of patients thus treated varied from eight to forty-eight years.

M. Beigelman.

Kuhlhatz, Walter. **Cataract extraction in congenital aniridia.** Zeit. f. Augenh., 1928, v. 64. April, p. 349.

A case report of bilateral congenital cataract with aniridia. One cataract was successfully extracted through a keratome incision. Uneventful healing followed. *F. H. Haessler.*

Melka, Jaroslav. **Cholesterin in the blood serum of patients with senile cataract.** Bratislavske Lek. Listy, 1927, v. 6, Jan., p. 187.

Hypercholesterinemia was found in twenty-four out of forty-eight patients with senile cataract. But otherwise healthy people over fifty years of age

often show an increase in blood cholesterin, so that the simultaneous presence of both phenomena is probably accidental and without causal interrelationship. The fact that half the patients had no excess of cholesterin suggests that cholesterin is without influence on the development of senile cataract. Many patients with hypercholesterinemia also have an increased amount of blood serum albumin. Of six patients with arcus senilis, three had normal blood cholesterin and three an increase.

W. H. C.

Pastega, A. **Clinical contribution to iontophoresis.** Arch. di Ottal., 1927, v. 34, June, pp. 248-255.

Twenty cases of incipient cataract were treated by iontophoresis, a solution of sodium and rubidium iodide being instilled in the sac and also used to cover the electrodes. Five to seven milliamperes were used for fifteen to twenty minutes. Some clearing of the opacities, especially in the anterior cortex, and considerable improvement in vision were noted in some cases, after long courses of treatment.

S. R. Gifford.

Sainton, Paul, and Renard, Gabriel. **Cataract, tetany, and dwarfism.** Arch. d'Opht., 1928, v. 45, June, p. 391.

A man forty-seven years old who entered the hospital for attacks of tetany was found to have a mature cataract in the left eye. About ten years before this a mature cataract had been extracted from the right eye. The attacks of tetany began at the age of twelve years and recurred every spring. The man was also a dwarf, with changes in the bones of a rachitic type. The whole picture favored the idea that a lesion of the parathyroid glands was the underlying etiology.

M. F. Weymann.

Salus, R. **Treatment of incipient cataract.** Med. Klin., 1926, v. 22, Nov. 19.

The author points out that the different experiments which have been carried out have not been well controlled. The improvement noted in a few days was probably due to the improved mental condition of the patient, to dilation of the pupil from the cocaine injection, and also to absorption of transudates in the vitreous. There was probably in some cases a swelling of the lens, which was really a further development of the cataract, but might overcome some of the hyperopia or astigmatism. Proof that any of the measures employed has in any way influenced the development of cataract has never been furnished.

Beulah Cushman.

Tassman, I. S. **The proteins of the lens and their chemical changes in the pathogenesis of senile cataract.** Arch. of Ophth., 1928, v. 57, July, pp. 361-376.

This interesting paper reviews in some detail much of the work of recent years concerning the proteins of the lens, and briefly refers to the other constituents. It does not lend itself to abstraction, but must be read in the original.

M. H. Post.

Vogt, A. **Learning to see after late operation for congenital blindness.** Schweiz. med. Woch., 1927, v. 57, Aug. 6, p. 753.

The first patient was operated on for congenital cataract at the age of twenty years. After three months her vision improved to between 0.1 and 0.2. The other patient, with normal light perception, was operated on at thirty-four years of age, and after two months had 0.07. These are real examples of amblyopia ex anopsia.

Beulah Cushman.

10. RETINA AND VITREOUS

Agatston, S. A. **The fundus as a definite index to arterial disease, with analysis of one hundred cases.** Arch. of Ophth., 1928, v. 57, July, pp. 286-392.

The author contends that sclerosis of the arterioles of the kidney and brain is always accompanied by similar conditions of the retinal arteries, and

that normal retinal arteries definitely exclude small contracted kidneys. He divides the changes occurring in the retinal arteries into seven different groups: (1) increased light reflex from arteries and veins; (2) reflex more marked from veins and arteries, pressure from arteries on veins appearing; (3) copper wire arteries, uneven in caliber, decidedly paler; (4) the same, with tortuosities of the small branches of arteries and veins; (5) the same, with small hemorrhages and exudates; (6) perivasculitis, with occlusion of small branches; (7) edema of the disc, large exudates, hemorrhages, atrophy of the retina, and low grade pigment proliferation. He then attempts to correlate these various findings with the condition of the blood vessels and kidneys. He tabulates his deductions under nine different headings, and concludes with the statement that more assistance could be given to the internist by the ophthalmologist in such cases than is done at present. *M. H. Post.*

Arkin, A. **On recurrent retinal hemorrhages.** Klin. Oczna, 1928, April, pp. 33-37.

Three cases of "recurrent retinal hemorrhage in adolescents" are described in detail, and the report is illustrated by photographs of the fundi. The ophthalmoscopic changes in the blood vessels of the retina (phlebitis retinæ), the recurrence of retinal hemorrhage, and late changes under the form of a proliferative retinitis are emphasized. The author is inclined to believe that tuberculosis is the important etiologic factor in this condition, and he speaks favorably of a conservative and cautious tuberculin therapy. *M. Beigelman.*

Bailliart, P. **Pressure in the retinal arteries.** Ann. d'Ocul., 1928, v. 165, May, pp. 321-348.

This article is divided into three parts. The first is a description of the author's instrument and method for measuring pressure, as previously given. In brief this consists of a cylinder with spring plunger which is placed against the sclera, pressure being made while the central retinal artery is watched ophthalmoscopically. The point of initiation of the retinal pulse is in general the diastolic pressure as read off on a gram scale on the plunger. The systolic pressure is the point at which the pulse is obliterated by further pressure. Modifications of the instrument are discussed. The diastolic retinal arterial pressure is about one half the radial diastolic pressure.

The second part of the article takes up the contributions of Gliedung and Duke-Elder. The author considers the work of the latter very remarkable from the standpoint of technique, but does not believe that any of the results prove himself wrong in his conclusions.

The last part is a brief discussion of the value of determining the retinal arterial pressure, with a few illustrations of conditions in which it varies from normal but in which its variations do not follow those of the general arterial tension. *L. T. P.*

Barkan, Hans. **Air embolism of the retinal vessels.** Arch. of Ophth. 1928, v. 57, July, pp. 403-411.

The fascinating subject of air embolus, with especial attention to its manifestations in the vessels of the fundus, is briefly, but interestingly, reviewed by the author of this paper. About sixty cases in all have been reported. A few of these showed marked ocular symptoms. Blindness occurs almost immediately, but in cases where the patient survives the first shock recovery takes place in the course of a few days. Stargardt gives a fine description of the fundus of a monkey following the injection of air into the carotid. Air bubbles and columns shoot through the retinal arteries. The vessels show a silvery gleam. In one or two seconds the arteries are all filled with air. The papilla becomes practically white. The capillaries of the retina are very soon seen as innumerable fine, glittering lines which hang together like spider webs. About two

minutes later the veins show a bright reflex from their middle. In about five minutes the whole phenomenon has passed.

The author observed the first part of this phenomenon in rabbits. Rod-like, silvery-white metallic particles were seen to shoot through the retinal arteries immediately following the injection of air into the right ventricle. The lumen of the vessels narrowed. The movement at first was irregular, as though the air was compressed before forcing on the column of blood ahead of it, but then it became almost like a volcanic eruption. Finally the entire arterial tree was outlined.

In one case the author found bilateral pericentral scotoma several months after recovery from four operations in which the pleural cavity was opened, symptoms of air embolism, immediate and complete amaurosis, shock, and so on, being shown on three occasions. The scotomata were attributed to the late results of cerebral air embolism about the superior lip of the calcarine fissure. The author describes the mechanism of air embolism and the cortical changes resulting therefrom.

M. H. Post.

Gertz, Hans. **Do the papillary vessels ramify in a numerical system?** Acta Ophth., 1927, v. 5, no. 4, pp. 352-356.

Because of their access to observation, Gertz studied the number and distribution of the branches of the retinal vessels to determine whether they followed a definite numerical system of ramification. Most of the article is taken up by the discussion of mathematical formulæ, and a table is appended showing the results of observation of the eyegrounds of 227 healthy subjects. No conclusions are drawn and none appears to be evident to the reader. *E. M. Blake.*

Hornicker, E. **On a form of central retinitis of vasoneurotic origin.** Ann. di Ottal., 1927, v. 55, Nov.-Dec., p. 865.

Continuing from a previous number, the writer cites cases of bronchial asthma, spastic constipation, hemicrania with scotoma scintillans, cardiac neurosis, premature ejaculation, hyperchlorhydria, erythema, and profound depression, all accompanied by capillary spastic central retinitis dependent on dystony of the neurovegetative system. He differentiates this from a similar symptom complex described by Graefe and dependent on lues. If not relieved, the angiospastic condition produces retinal changes that are permanent. The author's remedies are chiefly opium and calcium.

F. Park Lewis.

Maggiore, L. **The relation of the ophthalmoscopic picture and the visual function in occlusion of the central retinal artery.** Ann. di Ottal., 1926, v. 54, Oct., pp. 1057-1091 and Nov., pp. 1153-1184.

The author reports fifteen cases in which the ophthalmoscopic picture was correlated with the fields of vision. He describes the normal distribution of the retinal arteries and variations from the normal. The macular region itself in seventy per cent of the cases is supplied by a network of vessels contributed to by three of the larger branches. In such cases an occlusion of one branch does not cause total loss of central vision, which may remain as good as one-fourth. In thirty per cent the macula is supplied fractionally by each of three branches, loss of any one of which cannot be compensated and causes marked loss of central vision. In eyes with normal vessels central vision is lost when occlusion of the central artery is central to the region of the papillomacular branches, while if the occlusion is peripheral to this central vision may be spared without the presence of cilioretinal branches. In eyes with cilioretinal arteries the central vision is often spared when both temporal branches are occluded. The ophthalmoscopic picture depends on the distribution of the vessels, the seat of the occlusion, and the time elapsing since it occurred. Soon after occlusion the central retina is edematous, while later it becomes transpar-

ent and atrophic. The amount of edema depends on the thickness of the retina, hence it is most marked in the central region, where it may not disappear for over two months. The size of the cherry red spot depends on the type of fovea present, varying from one-fifth the size of the disc with a small, sharply cut fovea to one-half the disc breadth with a large, shallow fovea. The nerve may show the picture of a choked disc when total occlusion occurs. At the atrophic stage the color of the nerve may not correspond to the vision as the nerve may be quite white while central vision is retained by means of the papillomacular bundle. (Bibliography, field charts, and 26 fundus pictures.) *S. R. Gifford.*

Moscardi, P. **Clinical and anatomic contribution to the study of preretinal hemorrhages.** Ann. di Ottal., 1926, v. 54, Dec., pp. 1310-1326.

Five cases are reported in patients with the following conditions, which seemed to be the causative factors of the hemorrhages: arteriosclerosis of the retinal vessels without other signs of arteriosclerosis, generalized arteriosclerosis with interstitial nephritis, generalized arteriosclerosis without marked changes in the retinal vessels, typhoid fever, and cerebellar cyst with papilledema. The hemorrhages were all in the macular region, with the characteristics of round or elliptical shape, size of two to four disc-breadths, sharply outlined borders, disappearance of retinal vessels at the borders, and displacement of the blood with movements of the head. The author includes under preretinal hemorrhages those between the internal limiting membrane and the hyaloid membrane of the vitreous and those between the internal limiting membrane and the nerve fiber layer, and he believes that a distinction between the two forms can not be made ophthalmoscopically. The hemorrhages nearly always clear up in two to four months, and may leave practically no trace of their previous presence. In one of his cases white plaques appeared after the absorption of the hemorrhage, while in another these were present from the first and assumed the appearance of retinitis circinata. Pigment deposits were not observed in the author's cases. Vision returned to normal in two cases, to 7/10 in a third, and to 2/10 in a fourth. In the fifth case, due to cerebellar cyst, the eye was examined post mortem. Sections showed the hemorrhage to be between the internal limiting membrane and the hyaloid membrane. (Bibliography and eight illustrations.) *S. R. Gifford.*

Marri, E. **A case of albuminuric retinitis cured by iontophoresis.** Arch. di Ottal., 1927, v. 34, Jan., pp. 20-22.

The author's patient, a man of twenty-six years, showed marked central retinal edema with some atrophy and pigment displacement and vision of one-fourth. One eye only was affected. No improvement was obtained by general treatment with mercury, pilocarpin sweats, etc. After twenty-eight treatments with iontophoresis, the edema disappeared and vision improved to 7/10. *S. R. Gifford.*

Nicolletti, G. **The visual fields in albuminuric and circinate retinitis.** Ann. di Ottal., 1926, v. 54, Dec., pp. 1277-1290.

Ring scotomata, where their pathogenesis could be investigated, have usually been considered as due to changes in the choroid, affecting secondarily the layers of the retina. Interested in the question whether the ring scotoma could be produced by a purely retinal lesion, the author made field studies in seven cases of retinitis circinata and albuminuric retinitis with typical star figure in the macula. He observed a perfect correspondence between the distribution of the fundus lesions and the scotoma, and the scotoma increased in size with extension of the lesions and disappeared as the lesions cleared up. In circinate retinitis the scotoma enclosed a larger central area, while in albuminuric retinitis it surrounded the center close-

ly, as would be expected from the seat of the lesions. A relative central scotoma was often present, especially in albuminuric retinitis. The author concludes that the seat of the lesion producing the ring scotoma must be in the retina, usually in the internal and intermediate strata, and only exceptionally in the rods and cones, as the latter structures would not be expected to resume their function sufficiently to permit the disappearance of the scotomata observed in several cases. (Bibliography and field charts.)

S. R. Gifford.

Pavia, L. J. **Incipient central edema of the retina.** Revista Oto-neuro oftal. y de Cir. Neurol. 1928, v. 2, nos. 4 and 5, p. 176.

This is a series of observations following a report on the subject appearing in the February number of the same publication. The author has previously shown that when light of short wave-length is thrown from an arc and properly filtered, i.e. red-free, it produces characteristic reflexions from the macular region. Normally this is a single round dot at the deepest portion corresponding to the concavity of the mirror. When there is a central disturbance from whatever cause, e.g. edema, this regular reflexion becomes broken up or distorted. The peripheral outlines of the macular region produce normally a clear-cut circular reflexion, which in the presence of an exudate will become distorted or broadened. This method of examination thus facilitates the diagnosis of these difficult cases.

Ten cases are reported in detail, with photographs showing the normal reflexion and the various types of its disturbance. The author believes that the degree of distortion varies directly with the amount of serous exudate present. When the central edema becomes quite accentuated, all reflexions disappear, and the fovea assumes a granular appearance which is regarded as the incipient stage of cystoid degeneration. A bibliography is attached.

A. G. Wilde.

Peréz, Bufill. **Indications for vitreous withdrawal.** Arch. de Oftal. Hisp.-Amer., 1927, v. 27, June, p. 365.

The origin and present status of vitreous withdrawal especially as practiced by Zur Nedden are reviewed, as well as the author's personal experience with the procedure. After aspiration of varying amounts of vitreous up to 0.6 c.c. there is a distinct fall in intraocular tension. This is especially efficacious when combined with posterior sclerotomy. At times in these cases the anterior chamber is so obliterated that a section through it and iridectomy are not feasible. After the anterior chamber has once been reestablished, the ordinary operative procedures are in order. A warning is inserted that in cases of hemorrhage into the anterior chamber with increased tension sclerotomy repeated as indicated seems to give better results than vitreous extraction.

The instrument employed is a canula 0.8 mm. in diameter, the aspiration being derived from a 1 c.c. glass syringe. Punctures are made preferably between the external and inferior rectus, and so situated that the opening through the conjunctiva does not coincide with that in the sclera.

The indications are especially in cases of acute glaucoma with obliterated anterior chamber, or extensive anterior synechiæ.

A. G. Wilde.

Rauh, Fritz. **A peculiar change in the macula retinæ.** Zeit. f. Augenh., 1927, v. 63, Sept., p. 48.

On the day after exposure to heat and light from the fire box of a locomotive, the patient noted that the vision of one eye was reduced, that there was metamorphopsia, and that in a crescent about the fixation point colors seemed paler and small objects were invisible. The ophthalmoscope revealed a circular area of retinal detachment in the foveal region, 1.5 disc diameters wide. This remained detached and raised one to 1.5 diopters for over a year. The vision, which was reduced to counting of fingers,

could be brought to 5/6 with a glass. Gradually the vision became reduced to 5/9 and the area was becoming pigmented. The process will probably continue until absolute centralization results. Though no case precisely like this one has been reported in the literature, the author makes comparison with other cases having some points of similarity. *S. R. Gifford.*

Rossi, V. **Angiospasm of the retina.** Arch. di Ottal., 1927, v. 34, pp. 145-159.

Two cases are reported. The first was a girl of nineteen years with temperature and common signs of vasomotor instability. Both eyes showed a typical picture of spasm of the central artery, with cherry spot in the center and vision reduced to 1/50. On treatment by subcutaneous injections of an extract of lymphoid tissue combined with ovarian extract, vision increased to 9/10 and 7/10 and the fundus picture improved.

The second case showed marked vasomotor instability, with edema of the face and hands which had progressed to typical sclerodermia. The patient was seen during the attack, when vision was one-sixth, the vessels small, and the fundus gray. This attack lasted four minutes, after which the fundus picture returned to normal. The author thinks the first was a case of glandular imbalance with lack of ovarian extract and an excess of thyroid secretion which increased the tone of the sympathetic system.

S. R. Gifford.

Safar, Karl. **Increase in intraocular tension following retinovitreous hemorrhages in youth, and closure of the central vein from tuberculous phlebitis.** Graefe's Arch., 1928, v. 119, p. 624.

As the cause of retinovitreous hemorrhages in youth there is found a simultaneous disease of the retinal vessels. The latter affects the veins more and histologically is characterized as a tuberculous inflammation of the vessel wall. It arises for the most part directly from the blood, but can develop into a progressive retinal periphlebitis from a tuberculous inflammation of the uveal tract or of the papilla. This inflammation attacks preferably the small retinal veins, but it may also involve the larger retinal veins and even the central vein of the optic nerve; while secondarily the retinal arteries may become similarly affected.

In severe cases, there may result a secondary glaucoma, where the anterior section of the eyeball may clinically and histologically show the same changes as after thrombosis of the central vein. Iridocyclitis may be another complication and likewise may lead to increase of tension. As rare associated findings there may occur a tuberculous leptomeningitis of the optic nerve, retrobulbar infiltrations in the nerve septa, and ciliary perineuritis.

H. D. Lamb.

Satanowsky, Paulina. **Guttate choroiditis.** Arch. de Oft. de Buenos Aires, 1928, v. 3, no. 8, p. 432. (See Section 7, Uveal tract.)

Schall, Emil. **On so-called "varicose nerve fibers."** Zeit. f. Augenh., 1927, v. 61, Jan., p. 51.

In 1912 Nakaizumi described a case of "retinitis cachecticorum ex carcinoma ventriculi," in which he saw a peculiar change in the retina corresponding to the findings of Uhthoff in anemia, and which he described as "varicose nerve fibers." Nakaizumi believed himself to have demonstrated by various kinds of specific staining that Uhthoff's conception was correct and that the retinal changes are really hardened varicose nerve fibers. The histologic picture was first published in Axenfeld's text book, and up to the present time no disproof of the opinion has been published. *David Alperin.*

Scullica, F. **Etiology of juvenile retinal hemorrhages.** Ann. di Ottal., 1927, v. 55, May-June, pp. 452-455.

This article is a general review of the subject including the literature

bearing on the etiology of the condition, which has not been satisfactorily determined. *S. R. Gifford.*

Van Lint. **Embolism of a branch of the central artery of the retina after injection of metarsenobenzol.** Arch. d'Opht., 1928, v. 45, July, p. 425.

A review of the literature with regard to the effect upon the eyes of administration of arsphenamine is given. In the original case reported the patient developed an embolus of the inferior temporal retinal artery following a fifth injection of seventy-five cgm. of metarsenobenzol. The vision was permanently damaged. A plea is made for the use of mercury and bismuth in the treatment of ocular syphilis, because of rather frequent accidents and bad results with arsphenamine.
M. F. Weymann.

Zoldan, L. **On the behavior of the retinal lipoids in light and darkness.** Ann. di Ottal., 1926, v. 54, Nov., pp. 1185-1205.

The author exposed frogs to light or dark for two to six days, and examined their retinal cells by various selective stains for lipoid bodies after immediate fixation with osmic acid and other fixatives. Exposure to light produced microchemical changes in the lipoids of the retina, expressed by a failure of the lipoid globules to take the selective strains. The lipoids of the pigment epithelium and the layer of rods and cones behaved similarly, the globules not changing in size, but only in staining reactions. This the author interprets as due to a consumption of certain lipoid substances and allied lipo-aleuronoid substances under the influence of light. Examination of the mitochondrial apparatus of the pigment epithelium gave results agreeing with the conclusions of Lune and Busacca that this structure produces the retinal pigment. Besides the lipo-aleuronoid granules which previous authors believed were the source of the pigment, Zoldan believes that the lipoid globules also play a part in the process. (Bibliography and nineteen illustrations.) *S. R. Gifford.*

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Ascher-Fisher, M. **Tabetic atrophy of the optic nerve and treatment of syphilis.** Med. Klin., 1926, v. 22, p. 1991.

One hundred and seventy-seven cases of optic atrophy were studied as to the amount of specific treatment previously given. Only one had had a sufficient amount of treatment, and the optic atrophy was mild. The author concludes that sufficient early treatment helps to protect from neurosyphilis. *Beulah Cushman.*

Behr, Carl. **On metalues of the eye.** Zeit. f. Augenh., 1926, v. 60, Dec., p. 319.

Spirochetes are found in the optic tract in metalues only when inflammatory or degenerative lesions are present, but are found only in one-third of these cases. The spirochetes do not act through direct contact with the nervous tissue as in general paralysis, but only settle in the mesodermal tissue of the nerve. That the presence of living spirochetes here is of no moment is shown by their almost constant presence in the meninges in secondary syphilis.

The primary injury is not only to the marginal but also to the parenchymatous fibers, through the action of endotoxins liberated from dead spirochetes. As a result of this change the metabolism of the nerve fibers is upset, so that degeneration ensues. Live spirochetes do not bring about this change in the supporting tissue of the optic tract.

These considerations make it clear that one can expect no cures from therapy and that therapy can be harmful in that it actually increases the rapidity of destruction of nerve fibers. Behr has a very large series of very carefully controlled patients and found no single case of cure but several of direct harm. Salvarsan is more dangerous than mercury.

Of eight cases treated with malaria no practically useful improvement were noted. Five were unchanged, in

two the pupils again became active to light, and in one of these the patient again became able to distinguish light from dark. In the eighth case which still had a good central vision with some peripheral contraction, the central vision became reduced to 3/60 in a few days of malarial fever.

F. H. Haessler.

Castello, B. **Retrobulbar optic neuritis, especially the acute unilateral form.** Ann. di Ottal., 1927, v. 55, May-June, pp. 430-446.

The literature is reviewed, etiological symptoms, visual fields, and differential diagnosis being taken up. Difficulties in arriving at the exact diagnosis are emphasized and illustrated by two cases which were clinically diagnosed as amblyopia due to alcohol and tobacco but which obtained normal vision without changing their habits with regard to these drugs. Where excessive use of alcohol and tobacco cannot be found, other possible toxins should be looked for in diet, medicines, and working conditions of the patient. In the unilateral form, lues, multiple sclerosis, and sinusitis are the commonest causes, but diagnostic signs incriminating all these conditions may fail. A positive Wassermann may have no bearing on the etiology; a negative examination of the nervous symptom does not exclude sclerosis, of which amblyopia may be the only symptom; and the x-ray may be negative as to sinusitis. Two cases are reported in which no cause could be found. One regained normal vision in the course of two years, the other remained stationary for seven years with vision of 1/10.

S. R. Gifford.

Escat, E., and Frenkel H. **Some cases of optic neuritis cured by removal of the middle turbinate followed by trephining of the sphenoidal sinus.** Arch. d'Opht., 1928, v. 45, June, p. 353.

Attention was called to the literature describing the cure of optic neuritis by operation upon the sphenoidal sinus in the absence of pathological findings in the nose. Seven patients with optic neuritis were treated with marked imturbinate and opening of the sphenoidal sinus. Four of these patients showed nothing pathological in the sinus at the time of operation. The operative techique is given in detail. Three hypotheses are discussed with relation to the cure. The first idea that decongestion by loss of blood from the neighborhood of the nerve may be beneficial is held untenable because in three patients there is almost no hemorrhage. Second, there is the possibility that reflex vasomotor action influenced the result. Third, the most likely beneficial factor is the withdrawal of lymph from the subarachnoid spaces and from the congested tissue around the nerve.

M. F. Weymann.

Haken. **Optic neuritis in scarlet fever.** Münch. med. Woch., 1927, v. 74, Mar. 25, p. 495.

Three cases are reported of optic neuritis in severe scarlet fever (two also had otitis), without nephritis. In all the sight was regained in two to three weeks.

Beulah Cushman.

Horn, L., and Kozerer, H. **Treatment of tabetic optic atrophy with air injections.** Zeit. f. Augenh., 1926, v. 64, April, p. 377.

Repeatedly fifteen to twenty-five c.c. of air are injected into the meningeal space suboccipitally, and shortly afterward neoarsphenamin or other arsenicals are given. The general reaction is slight. In three cases there was a slight improvement, which remained stationary in two of the cases, and was followed by rapid deterioration in the third, due presumably to an exogenous injury. In the fourth case, in which results were not inconsiderable, the therapy had been combined with a therapeutic malarial infection. In some further neurologic cases the authors convinced themselves that injections of air through lumbar puncture was in no way inferior to suboccipital puncture.

F. H. Haessler.

Jauregg-Wagner. **On tabetic optic atrophy and its treatment.** Zeit. f. Augenh., 1927, v. 61, Feb., p. 127.

The author emphasizes the theory that in metasyphilis one finds two distinct processes: (1) the inflammatory, which is due to the local action of the spirochete; and (2) the degenerative process, which is attributed to a hypothetical spirochetotoxicosis.

It is interesting to note that in general paralysis not complicated with tabes, no optic atrophy occurs as a rule, although a large number of spirochetes are found in the brain. Igersheimer found no fundamental difference between optic atrophy changes in paralysis and tabes. Stargardt attempted to prove that in many parts of the visual tracts, both in paralytics and in taboparalytics, exudative processes were to be found similar to the same processes in all parts of the brain, and leading to degeneration of single bundles of the optic nerve. This however does not explain the occurrence of tabetic atrophy. At present, the conception that tabetic optic atrophy is not produced by the direct action of the spirochete on the nerve fibers is the most prevalent. Galezowski found that out in fifty-five cases of optic atrophy in the preataxic stage only eight developed ataxic symptoms. Fuchs also claimed that a tabetic in the ataxic stage was in no great danger of developing optic atrophy. Optic atrophy progresses in the otherwise absolutely stationary cases of tabes.

The author believes that in recent cases malarial inoculation will arrest the optic atrophy and that oftentimes vision is improved. Small doses of quinine are administered to avoid excessive body temperatures.

David Alperin.

Lindemann, Karl. **Report on a case of blindness from gas emanations following dynamite blasting in the mining industry. (A contribution to the question of blindness by carbon monoxide poisoning.)** Zeit. f. Augenh., 1927, v. 61, Jan., p. 72.

The author emphasizes the late appearance of subjective symptoms such as vascular disturbances on the retina and papilla, oftentimes leading to irreparable damage to sight. Prompt oxygen administration is the important physiological antidote. The pathologic process reaches as far as the chiasm.

David Alperin.

Scalzitti. **Optic atrophy in malaria.** Ann. di Ottal., 1928, v. 56, Feb., p. 148.

The author reviews the literature of the ocular pathology found in malaria. The subjective phenomena include dyschromatopsia, hemeralopia, nyctalopia, hemiopia, amblyopia and amaurosis. In the sensory motor field are photophobia, neuralgia, and paresis of the extrinsic and intrinsic muscles. Dendritic keratitis and affections involving the iris and ciliary body and retina are among the more serious organic involvements. The author describes a case of optic atrophy which he attributes definitely to the malarial parasite, although he recognizes the difficulty of determining with certainty that the plasmodium was the sole cause of the optic neuritis of which the atrophy was the result.

Park Lewis.

Taylor, James. **Cases of ophthalmological and neurological interest.** Brit. Jour. Ophth., 1928, v. 12, July, p. 376. (See Section 12, Tracts and centers.)

12. VISUAL TRACTS AND CENTERS

Bourguet, Julian, and Desvignes. **Cystic tumor of the hypophysis.** Ann. d'Ocul., 1928, v. 165, June, pp. 421-427.

This report is especially interesting because the ocular symptoms and signs are described by the subject, who is an oculist and coeditor of the report. Bitemporal hemianopsia was present. A removal of the cyst was performed. In conclusion the surgeon cites the case as an illustration of the advantage of surgery over radiotherapy, which is effectual in only about twenty percent of these cases. *L. T. P.*

Taylor, James. **Cases of ophthalmological and neurological interest.** Brit. Jour. Ophth., 1928, v. 12, July, p. 376.

Of the five cases reported two were of encephalitis lethargica. A physician aged fifty years had a left-sided ptosis with an external deviation of the eyeball. He was unconscious for some time, finally recovered, and later exhibited the Parkinsonian sequel. The second patient had diplopia, marked weakness, defective taste and smell, and sleepiness; later increasing weakness and death.

The next two cases presented double papilledema. A woman aged forty-six years gave a history of headaches, giddiness, and vomiting. The condition gradually cleared, and when observed four years later there was no evidence of trouble. The other patient, a young man, noticed defective sight. He had a central scotoma and a slight papilledema. The papilledema gradually increased to three diopters, and there was no light perception. Wassermann, sinuses, urine, and x-ray negative. A diagnosis of retrobulbar neuritis was made and was confirmed by others. Under treatment the condition entirely cleared.

The last case reported was of a boy aged eleven years, who suffered with headaches. An ophthalmic surgeon and a neurologist, apparently on insufficient evidence, had made a diagnosis of intracranial growth. Examination showed very red discs and the absence of any other signs of intracranial trouble. A diagnosis of so-called hyperopic disc was made. Observation seven years later confirmed this, in that the patient continued in good health.

D. F. Harbridge.

NEWS ITEMS

News items in this issue were received from Drs. H. Alexander Brown, San Francisco; A. E. Bulson, Fort Wayne, Indiana; Frank E. Burch, Saint Paul; John F. Curtin, Minneapolis; W. G. Gillett, Wichita, Kansas; D. D. McHenry, Oklahoma City; James M. Patton, Omaha; Thomas H. Shastid, Superior, Wisconsin; and Charles P. Small, Chicago.

Deaths

Dr. Harry Kahn, Chicago, aged fifty-nine years, died July 17 of cerebral hemorrhage.

Dr. J. F. Messenbaugh, Oklahoma City, aged fifty-five years, died June 18 from peritonitis. Among other distinctions, he was mayor of Oklahoma City from 1905 to 1907.

Dr. J. H. Johnson, Wichita, Kansas, died suddenly September 4, following an attack of appendicitis.

Dr. John S. Kirkendall, Ithaca, New York, aged seventy-four years, died August 10 of skull fracture received in a fall.

Miscellaneous

Beginning with the issue for October, 1928, the Atlantic Medical Journal will again be known as the Pennsylvania Medical Journal, says an announcement from its publisher, the Medical Society of the State of Pennsylvania.

At the Teachers' College, Columbia University, a course of instruction in sight conservation will be given during the spring session, in cooperation with the National Society for the Prevention of Blindness.

The U. S. Public Health Service, cooperating with the departments of health and education of the District of Columbia, recently made an examination of the eyes of 1,860 unselected school children in Washington. They found that 34 per cent of these children had a large enough error to need correcting lenses, while 10 per cent additional needed glasses for reading.

The department of ophthalmology at the University of Minnesota is planning to open a new pathological laboratory suitable for eye, ear, nose, and throat postgraduate students. This department will be in charge of Dr. Walter Camp, who expects to give a six months' course of lectures and demonstrations covering the pathology of the eye. He will be assisted by Dr. Charles Connor of Saint Paul, who will cover the pathology of the ear, nose, and throat. Conferences in pathology will begin October 15th and will continue until about May 1st.

Announcement is made of the Second International Conference on Light and Heat

in Medicine, Surgery, and Public Health to be held at the University of London, on October 29, 30, 31, and November 1, 1928. Communications may be addressed to the British Journal of Actinotherapy, 17 Featherstone Buildings, London, W. C. 1.

Steps will be taken to complete the fund of $4,000,000 to be raised for the erection and endowment of an eye, ear, nose, and throat hospital together with a research center for these specialties, under the auspices of Washington University of Saint Louis. The late Mrs. William McMillan gave $1,200,000 and the General Education Board gave $1,500,000, provided an additional million was raised elsewhere. The construction of the hospital will be begun at once on a site just east of the Saint Louis Maternity Hospital.

Societies

The Chicago Ophthalmological Society, under the presidency of Dr. George F. Suker, will adopt a new method for its monthly meetings which should stimulate the members and bring out a large attendance. On the third Monday of each month the meeting will be called at five p. m. at the Medical and Dental Arts Club, at which time there will be a presentation of clinical cases. Dinner will be served at six p. m., and the regular routine business will be transacted at this time. The time thus saved will make it possible to begin the scientific program promptly at seven p. m. There will be two or three scientific papers, each to be discussed by two stated members and then opened for general discussion.

Personals

Dr. Fassett Edwards has located in Oakland, California.

Dr. L. Webster Fox of Philadelphia, who has been visiting the ophthalmic clinics in England, returned home in September.

Dr. John G. McLaurin has been elected president of the Dallas Academy of Ophthalmology and Otolaryngology for the ensuing year.

Drs. John F. Curtin and Walter H. Fink recently announced their association in the practice of otolaryngology and ophthalmology, 501 La Salle Building, Minneapolis, Minnesota.

Dr. Frank Brawley, who has for several years been considered one of Chicago's leading golfers among the doctors, recently achieved the distinction of making a "hole in one" at the Flossmoor Country Club.

Dr. Frank Allport and his wife, formerly of Chicago, who have been living in France for a year or more, came back to America for a short visit this summer. They have returned to Nice, where they will live indefinitely.

Dr. Henry N. Blum of New Orleans left for Europe in the middle of September, to be gone until January, and spending two months in Vienna.

Dr. James M. Patton of Omaha has returned from an extensive European trip.

Dr. E. C. Foote of Hastings, Nebraska, sailed recently for India, to be gone till next June or July.

Dr. Clyde Alvin Clapp of Baltimore was recently married to Miss Ellen Lucretia Richardson of Saint Louis.

Dr. Thomas Hall Shastid, of Superior, Wisconsin, who was confined to his bed nearly all summer with an injured leg, is now able to walk again. The doctor has removed his residence across the bay to Duluth, Minnesota, in order to be nearer his office, which for a long time has been in the latter city.

Since the death of Dr. Frank A. Morrison of Fort Wayne, Indiana, Dr. Albert E. Bulson has become sole head of the department of ophthalmology at the Indiana University School of Medicine. This chair was shared jointly by Drs. Morrison and Bulson, Dr. Morrison doing the clinical work and Dr. Bulson the teaching.